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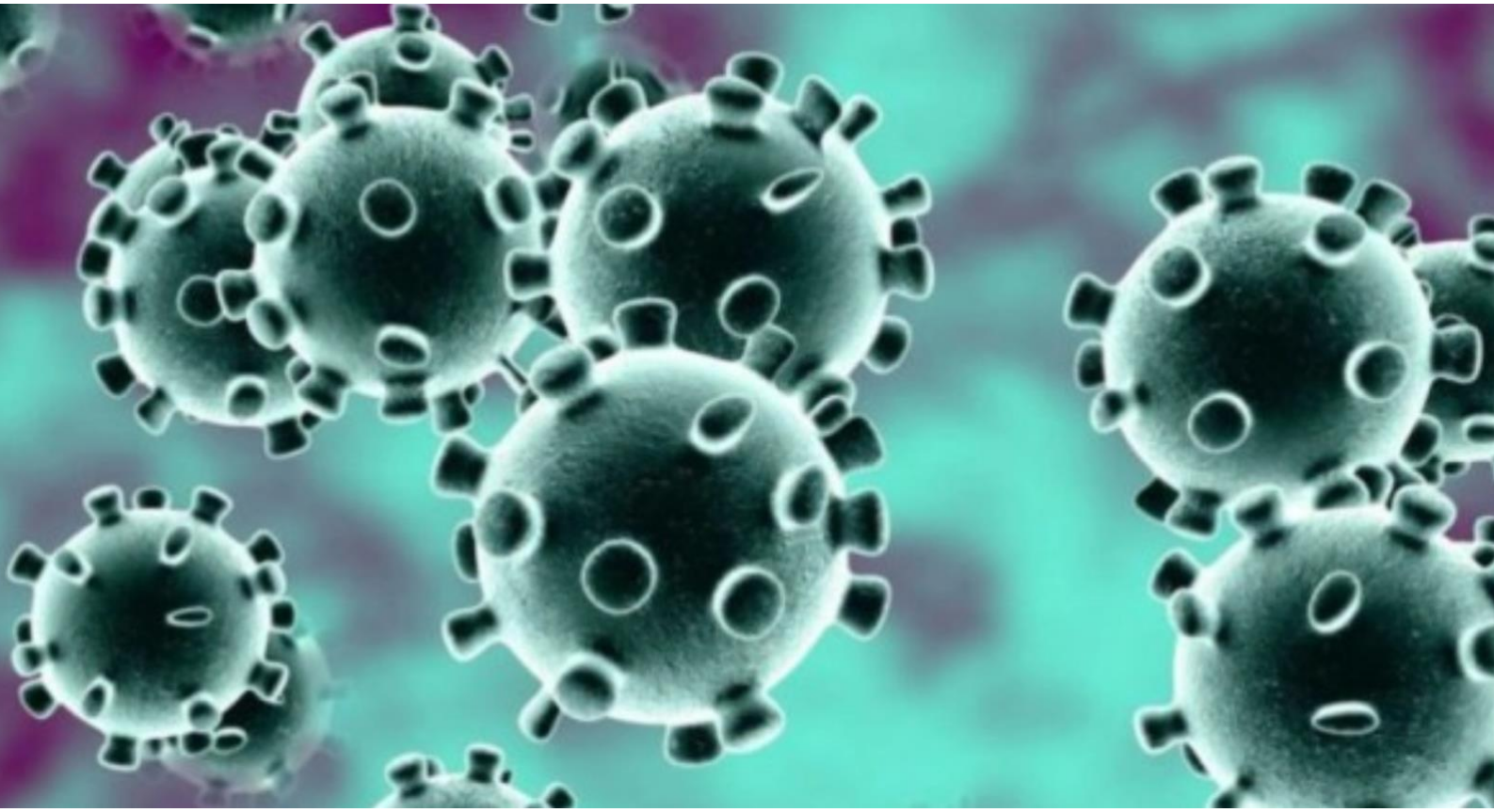

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Borderline Personality Disorder with Paranoid Features

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Abstract
This paper aims to evaluate the current and dynamic profile of a 19-year-old with Borderline Personality Disorder (BPD) with paranoid features. The case allows us to detect how the symptoms associated with BPD evolve on a background of poor management of potentially stressful events. There is a Borderline personality structure with obvious paranoid features, which pushes the patient into dysfunctional behaviors, aggressive acts and suicidal tendencies, the patient's instability, chaotic sexuality, addictive and self-harming behavior being observed. There are elements specific to an antisocial personality with narcissistic notes, which highlight impulsive and manipulative tendencies, accompanied by recurrent conflicts and delinquency. The clinical picture of axis II pathology is highlighted, an accentuated aspect being represented by the deficient defense mechanisms, which prevent the integration of the events in an adequate way. Considering the patient's self-destructive behaviors, impulsiveness, and multiple addictions, in the absence of appropriate treatment, psychotherapy, and/or pharmacological treatment, several future complications may occur, including risks of future problems with the law, self-destructive behaviors, and suicide attempts.

Keywords: Borderline, Impulsivity, Self-Destructive Behavior, Addictions

1. Introduction

Although it was initially considered a variant spectrum of disorders such as schizophrenia, Major depressive disorder, and Post-traumatic stress disorder [Gunderson, Weinberg & Choi-Kain, 2013], borderline personality is currently presented as one of the most troubling problems in psychiatry and is characterized by emotional turmoil and chronic suicidality [Sayrs & Whiteside, 2006].

Regarding the prevalence of borderline personality disorder, it is approximately 4% in the community but up to 20% in many psychiatric clinical populations and is characterized by significant morbidity [Kernberg & Michels, 2009]. Both the recognition of the benign course of the disorder and the emergence of relatively effective psychosocial interventions that accelerate the rate of improvement have led to progress in understanding borderline personality disorder [Fonagy & Bateman, 2006].

The patients with PBD are usually hospitalized after suicide attempts or based on the risk of suicide or danger to others, the severity of symptoms, difficulty with self-care, and non-compliance with treatment [Pascual, Córcoles, Castaño et al, 2007].
Borderline personality disorder is a diagnosis that must be treated with caution especially regarding the severity of the symptoms. The BPD patients have higher lifetime rates of sexually transmitted infections and medical problems and a greater risk for future health problems through the earlier onset of smoking, higher rates of nicotine dependence, and other forms of substance abuse or dependence than other patients with personality disorders [Chanen, Jovev & Jackson, 2007].

Patients with BPD are characterized by hypersensitivity to rejection and preset a fearful preoccupation with expected abandonment, this type of patients feel that their lives are not worth living unless they have a connection with someone who cares for them, but often the idealization can dramatically shift to devaluation when the patients feel rejected [Gunderson, 2011].

The child with borderline tendencies has a genetically based hypersensitivity to interpersonal interactions and this can interact with adverse early caretaking experiences and later stressors and can lead to disorganized and controlling interpersonal strategies, seeming that an important factor in the development of BPD is the disorganized parent-child relationships or the distress caused by separations, which are likely to represent early components that increase the likelihood of BPD [Gunerson & Lyons-Ruth, 2008].

1.1 Family data

The father is an alcoholic, addicted to gambling, aggressive, and an instigator of quarrels. He resigned from his job as a locksmith because the boy's mother was earning enough money for them to have a good life. He is a negative influence on V, drawing him into the area of gambling and alcohol consumption.

The mother is a secretary. In V's childhood, she used to be severe and put a lot of emphasis on school and education. Now she is very permissive and V has a very open relationship with her.

His grandfather is the one who raised him until he was 7 years old. He started a conflict with V's parents because of the boy's desire to stay with his grandfather and not move with his parents to Bucharest.

V is 19 years old and is a high school student in the 12th grade. He is a single child and lives with his parents. He was raised by his grandfather until the age of 7, until the family decided to come to Bucharest, despite his desire to stay with his grandfather.

In 2006, in the first grade, for the first time, he started to be very aggressive. He destroyed objects in the classroom, but without hurting other people, out of the desire to return to his grandfather. "Until then I was never violent." This incident led to his hospitalization for 2-3 weeks, receiving the diagnosis of Attention deficit hyperactivity disorder (ADHD) and Oppositional defiant disorder (ODD) at 7 years old. It has been observed that higher levels of ADHD and ODD at age 8 predict higher levels of BPD symptoms at age 14 [Stepp, Burke, Hipwell & Locher, 2012]. Considering this aspect, the diagnosis of oppositional disorder may be a precursor to the specific manifestations of borderline disorder that appeared in V's adolescence.

Because he wanted to stay with his grandfather despite his parent's decision, V became very aggressive and agitated in class. Because of that he's father was forced to supervise him in school, at the request of the school management, but this was not helpful for V, especially since as soon as he got home he was surrounded by conflicts, quarrels, swearing, aggressive behaviors, or, when the father was at gambling or at the bar, he had to stay home with his mother, who was "obsessed with homework." Early separation has been linked to BPD in children and adolescents with associations found, also, between BPD in adults and early separations based on retrospectively reported data. The BPD symptoms are higher on average among children with early separations, also, the BPD symptoms decline at significantly slower rates for these children compared to the young people without early separations [Crawfors, Cohen, Chen et al, 2009].

In 5th grade, he had to move to another school because of his disciplinary misconduct and negative influence on other children. "I always had something to object." "I had the power to influence others, I was told that I was ruining the class." V claims that he was never interested in school and considered it useless "The educational system is flawed, the school does not focus on people, personal development, spirituality, does not focus on what matters," and this determined him to behave inappropriately in class.

In his first year of high school, he was turned down and mocked in front of the class by two girls he liked, which "hurt him deeply" and this led him to change and document about personal development, to read books, and to attend various courses. "I started looking for personal development sites on the internet, at 15 I learned how to talk to girls." After that, he got into a relationship with M, "I went to the most beautiful girl in the class, I said that she would be mine and things happened as I said." Due to the frequent quarrels and the mismatch between the two, the relationship ended shortly after, leading to V's first suicide attempt.

At the age of 17, because his father introduced him to gambling, he started developing an addiction to such games. "I had a passion and a psychological dependence on the game, the inability to control my impulse to play." The patient claims that gambling was a way to escape the quarrels and conflicts around him, being a way of disconnection and intense experience. "It's about the disconnection that gambling offers, it stops your mind and you feel that you are alive, you live the moment intensely."

At the age of 16, he began a very intense relationship with G, which lasted 2 years. Due to disagreements between V and the girl's father, the relationship ended with a restraining order for V. This separation led to a new suicide attempt, so the restraining order was followed by an involuntary psychiatric hospitalization order requested by the girl's father.

At the age of 19, he decided to continue his studies, wanting to take the baccalaureate and finally to go to Law school. He was also claiming that he no longer kept in touch with G since the issuance of the restraining order, and accepted the breakup "I don't even miss her anymore, I already have experiences with other girls."

1.2 Psychiatric history

His first symptoms appeared at the age of 7, in 2006, following the violent episode at school in which he was very aggressive, an event that led to his hospitalization for 2-3 weeks, receiving the diagnosis of ADHD and ODD, a diagnosis that now, V accepts to be true. "I think I had ADHD, I did not accept the things that were imposed on me from the external environment."

The first hospitalization in psychiatry took place in 2015, when V was 16 years old, being diagnosed with Bipolar Affective Disorder. The hospitalization took place after the separation from M and V's suicide attempt, on a background of alcohol consumption of "400 ml of vodka in 3 minutes." He tried to jump off the building where the girl lived, as a result of not accepting their separation and her refusal to resume the relationship. "I told her that I will jump off the building because of my inability to accept the separation." V claims that the separation between the two took place due to frequent quarrels, reproaches and "due to unconsciousness, attachment and the dysfunction that led to a love-hate relationship," as well as V's failure to know when to accept the end of the relationship, which he considers to have originated in the attachment traumas from his childhood. "Because of my inability to know when to end things, I think it's because of the attachment traumas.". V confesses that his climb on the building was a subtle way of blackmail to make M reconcile with him "It was a manipulation in all its splendor, an unconscious manipulation." During the hospitalization, V refused to take the medication prescribed to him, he left the hospital after 2-3 days, without giving any importance to the diagnosis.

The second psychiatric hospitalization took place in 2017, at the age of 18, following the separation from the last partner, after a relationship of approximately 2 years. He was hospitalized by court order for temporary involuntary hospitalization until recovery or until the elimination of any state of danger, and he was diagnosed with BPD.

At the age of 16, V began a relationship with G. Their sexual intercourse used to take place anytime and anywhere. "I was just sleeping, talking to her and having sex all day." Also, sex and sexual activities such as messages and pornographic language were the main activity of the couple. Due to the restrictions imposed by the girl's father, the meetings between them were limited to short encounters and sexual intercourses, which displeased V, who wanted to spend even more time with G. “I noticed that I had sex at my discretion, affection, things couldn't be better than that. The big problem was that we couldn't go out too much, we just had sex." "I put a lot of psychological pressure on her to get more freedom." This determined G to stop listening to her father, which led him to start a civil lawsuit to obtain a restraining order so that V can no longer approach his daughter. Despite the restraining order, V tried to meet with G, thus violating this order on the first day of the issue, because he could not accept the separation between them, “I violated the restraining order because I love her and want to go to prison.” V filed an appeal to have the restraining order annulled, but lost the civil lawsuit. "I appealed the restraining order just to fight with her father, at least to take his money because I knew he was paying a lawyer."

As a result of the separation, in December 2017, a series of suicidal tendencies and self-destructive behaviors were triggered. He cut his wrists very badly, stopped eating, self-mutilated, and took 84 paracetamol pills, behaviors performed because of "pure suffering and despair."

A second case was opened in V's name for involuntary hospitalization in psychiatry but the patient decided to appeal not to be hospitalized, knowing, however, that this appeal did not suspend the execution, making this gesture out of a conscious desire to aggravate the situation of the father. "My macabre satisfaction was to make those people walk more.”

Before arriving at the hospital, a violent incident took place with the girl's father, on a background of alcohol consumption. "I drank almost a liter of vodka," thus he got close to the girl's house and started an argument with her father. I thought I'd make another joke and be evil and slick. I stalked her father, I cursed him a little to make me feel better, he got out of the car, put his hand in my throat and we started a fight. He didn't hit me, but I punched him." Because of this event, there is a risk of opening a new case for acts of violence, but the patient does not attach importance to this aspect. He asked to represent himself in the appeal and managed to win the appeal for involuntary hospitalization, being allowed to leave the hospital "I know I'm selfish and tough, but I'm glad I kind of beat him. Based on the hospital ticket I can no longer be hospitalized.”

2. Method

An examination of the current mental state was made.

Activity: he has a fluctuating functioning, both with moments of alteration of the activity caused by the alcohol consumption “I couldn't stand up anymore,” and with moments of depressive states that prevent him from carrying out his activities in an optimal way.

Disease awareness: the patient has minimal confidence in the diagnosis received and presents non-compliance with the prescribed treatment "Diagnosis that turned out not to be true." "My problem is the only problem of humanity, namely unconsciousness."

Willpower: he has plans for the future in the professional field and he has achievable goals "I do not go to college this year, I want to study law, to enter the first places, especially since I already have experience."

Affectivity: the predominantly observed feelings are those of anger, shame, and sadness, the emotional tone of the discussion is consistent with his stories.

Thinking: the patient has organized thinking, showing logical, coherent reasoning, noting the tendency to philosophize. Concerns for fairness and law enforcement are noted.

The language: he is coherent, the discussion is fluid, the answers provided contain details and the spontaneous discourse is rich. It is observed that he chooses carefully his way of expression and he uses an intellectual language “I want the inalienability of freedom.” "Identification with an external source of psychological gratification."

Attention: he can concentrate and sustain the speech throughout the discussion, managing to stay attentively connected to the situation.

Social functioning: social functioning is disrupted by behaviors specific to an antisocial personality, characterized by breaking the law, violence, irresponsibility. Paranoid traits are manifested socially through the fixation for injustice, being in a constant fight with the system.

Appearance and behavior: it has a neat, clean appearance, being noticed the concern for the external appearance and the presented image. The behavior is consistent with the appearance, he has controlled gestures, which denotes care for the appearance of a pleasant image.

Attitude: he shows an attitude of superiority, nuanced by charisma and good self-control.

Instincts: an exacerbation of sexual instincts can be observed. The patient manifests impulsiveness in his sexual desire and sexual intercourse. Also, an accentuated self-defense instinct can be observed, manifested on a physical level through repeated conflicts with the father of the former partner, as well as on a moral level, the patient refusing to be represented by a lawyer and chooses to defend himself in court. In his depressive episodes, a disturbed eating pattern is observed, the patient refusing the consumption of food.

3. Results

In V currently has a cluster B, dramatic-emotional disorder, and was diagnosed at his second hospitalization with Borderline personality disorder. Borderline personality disorder is characterized by instability, impulsivity, chaotic sexuality, suicidal acts, self-mutilation, identity problems, and feelings of emptiness and boredom [Kaplan & Sadock, 2001].

V presented a series of self-destructive gestures and acts and suicidal tendencies which has been present in multiple situations: he climbed the building after excessive alcohol consumption after breaking up with M, he took 84 pills and tried to commit suicide by cutting his wrist after the end of the relationship with the second partner.

As time passed, his tendencies of hyper dependence and excessive demands were more predominant [Predescu, 1989]. "I wanted to spend time with her, I put psychological pressure on her to spend time together, my mind wanted even more than that."

He showed excessive impulsiveness that was observed in several areas of his life: he spent excessive amounts of money on gambling, alcohol, and food; he abused alcohol. "I had a problem with alcohol, I drank 400 ml daily, I drank everything I had," and presented impulsivity in relationships and sexual intercourses. "I had sex in an apartment building." "I was sleeping, talking to G and having sex all day."

He presented emotional instability due to the marked reactivity of the mood. He had depressive episodes for several days in which he refused to get out of bed, eat, and had suicidal tendencies and self-mutilating behaviors. Also, he showed ruminant tendencies. "What brings me to extreme situations is the identification with an external source of psychological gratification, and when there is a risk of loss or change, the thoughts generate a great resistance, which creates emotions, which create thoughts that never end.”

V's efforts to avoid real or imaginary abandonment could be observed, which he considered having originated in the attachment traumas. "I could not accept this separation" ; ”We broke up because of my inability to know when to end things, I think it's because of the attachment trauma"

V's relationships were characterized by instability. He had very intense and unstable interpersonal relationships, characterized by countless quarrels, conflicts, reproaches. Also, he presented manipulative tendencies in interpersonal relationships, highlighted by his climbing on the building to force M to reconcile with him, and by the pressure put on G to spend more time together and to not listen to her father.
Given the classification made by Grinker, V falls into group IV -neurotic border- characterized by narcissism, this aspect being accentuated by his tendency to establish hyper-dependent and difficult relationships [Predescu, 1989]. He could not tolerate being alone, and showed identity disturbances, which were the most present when he was not involved in a relationship. "I seek gratification through a relationship with someone else and when this identification is broken, my identity no longer exists. Who am I without her?"

He repeatedly demonstrated the feeling of emptiness and chronic boredom that he could only remove it by engaging in high-intensity, high-risk situations: gambling. "It's about disconnection gambling offers, it stops your mind and you really live, you live the moment intensely," intense relationships. "I seek gratification through a relationship with someone else," going to the courts, because of the legal issues about which he stated that, "they are a pleasure, these experiences seem to be something out of the ordinary," seeming that all these events gave him a feeling of pleasure and intense experience.

In many situations could be observed both inadequate anger and inability to control this nervousness that appeared at an early age, marked by the episode of aggression from 7 years old that required his hospitalization. V frequently engaged in inappropriate behaviors at school, interrupted classes, was dissatisfied with the "defective" educational system that did not allow him to assert himself and restricted his freedom. "I want the inalienability of freedom," and he actively sought conflicts with G's father, eventually resulting in physical violence.

V manifested aspects of paranoid personality disorder (bizarre-eccentric cluster A). In psychiatric nosology, DSM-IV and V describe PPD as a disorder with suspicious and ruminative traits, ICD-10 PPD including traits of excessive importance and hostility [Lee, 2017]. V was distrustful of the last partner's family, their motivations being interpreted as malicious, and he was looking for signs that confirmed the idea of threat. "I am not the universe, but I admit that their desire to hurt me seemed too exaggerated, I wanted to hurt them."

V had notes of suspicion, he perceived attacks on his reputation, which were not visible to others, and tried to counterattack. "I know I'm selfish and tough, I'm glad I kind of defeated him. Based on the hospital ticket, I can no longer be hospitalized." V showed irritability and hostility towards the former partner's family and the court proceedings, and manifested hypervigilance throughout them. "I appealed the restraining order just to fight with her father, at least to take his money because I knew he was paying a lawyer." He showed permanent tension, pursued his personal goals, and manifested the ability to logically present his arguments even in situations with increased importance. "At the moment I can't stop, because there are still some appearances at the court, but I don't mind."

In V's case, the paranoid side stood out very well and was highlighted by his fixation on fairness and injustice. He was interested in law, was in a continuous battle with the system, found pleasure in the courts, and expressed his desire for others to set the limit. "I would have stopped at any time if only the girl dared to tell me to stop."

There was also a series of actions specific to a personality with antisocial tendencies (cluster B), who was in constant conflict with society, was selfish, irresponsible, and lacked compassion. He was repeatedly impulsive and unable to feel guilt or learn from his experiences, coupled with a low level of tolerance for frustration and a tendency to blame others [Kaplan & Sadock, 2001].

V expressed non-compliance with social norms regarding his behaviors within the law, indicated by both the violation of the restraining order submitted by the family of his former partner. "I violated the restraining order, I do not see anything serious." "I told her I love her and I want to go to prison," as well as the possibility to open a third case in court for acts of violence. He showed signs of irritability and aggression, indicated by physical attacks during the misunderstanding with G's father, thus impulsively ignored his own safety and that of those involved: "He did not hit me, but I punched him."

V showed persistent irresponsibility, which was indicated by the repeated inability to maintain a regular work behavior, an aspect manifested at the end of the 11th grade when he had to transfer to another high school to avoid the negative consequences of this behavior “I had 82 absences,” “I was laughing at people, I'm not at school because I want to, but because I have to, that's why I am objecting, that's why I am doing it.”

There was a lack of remorse and sensitivity towards other people, which could be seen in the way he referred to the beginning of his former relationship and in the repeated appeals brought in court. “I wanted to see if I could get to bed with this young lady as well. It was something selfish on my part, she was attracted to me and I wasn't interested.”

The evidence of conduct disorder began before the age of 15 and was present in the incident that led to the first hospitalization, at the age of 7, in which he had an impulsive outburst with aggressive indices, without being violent towards people. “I threw chairs, benches. I didn't hit anyone."

Finally, the patient had manifestations specific to a personality with narcissistic tendencies (cluster B). Could be remarkably noted the feelings of grandeur, the feeling of entitlement, the lack of empathy, the manipulation, and the need for attention and admiration, which represents a pervasive pattern of grandiosity and hyper-concern with self-esteem issues [Kaplan & Sadock, 2001].

V manifested a grandiose feeling of self-importance, which was associated with the sensation of being a special person "I was aware of my intelligence." "My parents couldn't beat me, they didn't have the physical strength to beat me, nor did they try to slap me or anything." The patient had also fantasies of success, power, and ideal love, manifested both in his aspirations regarding his academic future “I am not going to college this year, I want to study Law, especially because I already have experience.” and in the way he described the relationship he had with his last partner “I noticed that I had unlimited sex, affection, I had everything I wanted, it couldn't be better than that.”

Based on his relationship with G, there was an interpersonal exploitation behavior. He was taking advantage of her feelings for him and accepted that the girl violated her own morality by stealing the sum of 600 ron from her parents to offer to him, thus he achieved his own goals through her. “She brought me the money. Is not stupid who receives, is stupid who gives." He expressed the feeling of entitlement in his relationship with his last partner. He wanted her to comply with his own expectations from their relationship. He wished that she would miss high school and quarrel with her family to spend more time with him, and resorted to various ways to convince her. "I was putting psychological pressure on her to spend time together."

There were superior behaviors and attitudes about both the educational process. "The education system is defective," and the people he came in contact with and stated that he has strong persuasion skills. "I had the power to influence others, they told me that I was ruining the class.”

4. Discussion

The stress-diathesis model for V, involves, along with the heredocolateral antecedents, the following traumas that loaded the patient's vulnerability:

- Diagnosis of ADHD and ODD at 7 years old and refusal of medication;
- The rigid living environment, in which he was supervised at school by his father, and at home was forced to do homework by his mother;
- Family quarrels and conflicting atmosphere;
- His father facilitated his contact with gambling, thus triggering his addiction to them, although in the past he felt hatred for them "I fought with them for months." Also, the constant exposure to his father's addiction led to problems in managing alcohol consumption "I had a big problem with alcohol;"
- The permissive attitude of his mother that accentuated V's hostility within the lawsuits; -Alcohol consumption from an early age;

- The traumas he experienced during the period of personality development and structuring [12].
- Stress (trigger) is represented by:
- Early loss of the person he was attached to at the age of 7 so that the separation from his grandfather and moving with his parents triggered his violent outburst at school;
- The death of his grandfather;
- Separation from M, which triggered alcohol consumption and suicide attempts, the patient wanting to jump from the building where the girl lived;
- Separation from G, which triggered a second suicide attempt by paracetamol overdose accompanied by self-mutilating behaviors (cutting his wrists).

The factors that maintained V's dysfunctional behaviors are represented by both the lack of adequate treatment and the permissive attitude of his parents, especially his mother, during V's adolescence and the constant receipt of money (300 lei per week), which facilitated and maintained behaviors such as alcohol consumption and gambling. Morison indicates that for borderline adults with childhood hyperactivity syndrome, educational factors also intervene, such as the children's behavior being insufficiently controlled by parents [Predescu, 1989].

In V's case could be observed a constantly reduced capacity to persevere in purposeful activities, especially when it involved long periods of time and delayed satisfaction [Trifu, Dragoi & Vlaicu, 2019]. The patient does not find a reason why the school would be useful for him, thus from the age of 7 he began to be agitated and impulsive at school, and faced absenteeism and unsatisfactory school outcomes. Despite these problems, he did not consider it to be anything serious or wrong, and stated that the educational system is the "defective" one, where nothing useful weas learned. "The school does not focus on people, on personal development, spirituality, it does not focus on what matters." The patient stated that the school does not let him assert himself, it violated his rights and freedom. "I want the inalienability of freedom." and considered that his behavior was the most appropriate "If all children acted like me, the educational system would change, everyone should learn what they want."

V manifested altered emotional behavior characterized by emotional lability, highlighted especially by the discrepancy between periods of sadness, "pure suffering and despair," which involved lack of appetite, self-destructive behaviors, self-mutilation, suicidal thoughts, suicide attempts, and periods of expansiveness characterized by hypersexuality, antisocial behaviors and the symbolic struggle for justice.

Could be noted the disinhibition of the expression of needs and impulses without taking into account the consequences or the social conventions. This aspect was manifested by sex and alcohol consumption in public areas, the manipulation of his partner and his attempt to turn G against her father, the violence against G's father, the disturbance of classes, absenteeism, filing appeals regarding the restraining order and involuntary hospitalization and violation of the restraining order. These things were done in the absence of remorse, guilt or criticism, a specific manifestation of an antisocial personality, and in the presence of a sense of superiority, grandeur, and an emphatic attitude, thus stated that he is the only one who acts correctly, justly, establishing justice.

The excessive preoccupation with the theme of "justice," specific to its paranoid side, could be observed at V by referring to his inclination and vast knowledge in the field of law, to the pleasure he found in the courts, in search of truth and establishing justice.

Despite some traumatic experiences the patient went through during the period of development and structuring of his personality, he claimed that the experiences he went through changed him for the better, and after that he put a lot of emphasis on living the moment, anchoring in the present and lack of critical attitude. "The trauma I went through with courts, hospital, and scandal forced my conscience to wake up, I have a full acceptance of everything that exists, I apply the principle of non-criticism, acceptance of everything that exists as it is."

It symbolized the need to forget the past and his need to live the events, the desire to go through exciting situations, without barriers, not knowing when to end or critically analyze what was happening around him.

"From my inability not to know when to end things." There was a constant lack of criticism regarding the severity of his behavior and the situations in which he engaged. He needed the establishment of external barriers in order to function optimally in society. "I would have stopped at any time if the girl dared to tell me that."

4.1. Psychodynamics of Borderline Personality Disorder

In V's case, the split of the self was achieved by compartmentalizing his feelings, their integration not being possible. This cleavage manifested by the division of people around in “totally good" and “totally bad" led to the activation of emotional and behavioral responses of contempt for people characterized as negative. "I further accentuated my hatred for her family," which hindered the ambivalent integration of his interpersonal contacts.
The primitive idealization, found in the relationship with his last partner, revealed the attribution of an almost ideal description to the interaction between them. "I noticed that I have sex at discretion, affection, could not be better than that."

Projective identification was used in relationships with people for whom he had strong feelings of love by assigning positive idealized traits. This intrapsychic defense mechanism was observable in the patient's discourse about his relationship with G. “When this identification was broken, my identity was gone. Who am I without her?”

V's fear of abandonment has been present since childhood when he was forced by his parents to stop living with his grandfather, who represented his figure of attachment, the patient's attitude was one of hostility and aggression. This perceived abandonment was not completed in a secure way and migrated later in his relationships during adolescence when the separation from M occurred. This incident was felt like a second abandonment because he did not want the separation, his pain materializing through a suicide attempt, and culminated in his first psychiatric diagnosis. These sequences were amplified by his impulsive side, which facilitated his aggressive and self-destructive tendencies.

Given the specificity of the affective and behavioral responses that V manifested in relation to the people invested by him with strong feelings of love, it could be noticed a possible unresolved subphase of the process of separation-individualization within the theory of M. Mahler [Predescu, 1989]. This led to the failure of structuralization and internal control, aspects manifested both by instinctual discharges with a rich negative emotional coloration and by the continuous search for a person to attach to in order to maintain his emotional peace " What brings me to the extreme situation is identifying with an external source of psychological gratification. When there is a risk of loss or change, thoughts generate a great deal of resistance that creates emotions that create thoughts that never end.”

In V's case, the return against himself was achieved through suicide attempts, thus trying to materialize the emotional suffering. The lack of positive coping mechanisms led him to the inability to manage the accumulation of sadness felt in certain unfavorable contexts, even wanting to endanger his own person. Also, the lack of self-protection led him to involvement in activities that could have negative repercussions on him, this aspect was visible by initiating aggressive outbursts and violating the restraining order.

4.2. Psychodynamics of the paranoid personality

In V's case, shame was a characteristic that accentuates the attention he paid to his self-image, having strong feelings of shame when something was not in line with how he wanted to be seen by others. This aspect was present since childhood when his father had to accompany him daily to school to supervise him, so his psycho-affective response to this period was imbued with feelings of shame for the fact that he was the only child accompanied by his parents at school. This attitude was also adopted in adolescence when his father came under the influence of alcohol to visit him at the hospital. Thus, V's attempt to maintain an appearance as close as possible to the ideal one made him show feelings of shame in situations that could damage the desired image.

The unresolved separation and autonomy issues were key factors in understanding the whole process. The separation from the grandfather represented the loss of the attachment figure who cared for him until the age of 7

being achieved without his consent, which accentuated the subsequent emotional suffering. This episode had repercussions not only on the affective level but also on the behavioral one of the patients. This was manifested by the aggressive outburst that led to his hospitalization, the revolting attitude towards the objects in the classroom being the way in which he expressed his dissatisfaction with the separation from his grandfather and, implicitly, going to school far away from him. The very place where the incident happened, the school, could be the reason for both the outburst under the impulse and his subsequent hostile attitude towards educational institutions, believing that school was the factor that led to unwanted separation from his grandfather.

Also, the separation from M happened without his will, which led to his attitude of non-acceptance, his subsequent behavioral response being followed by his first psychiatric hospitalization. The two moments of separation were similarly internalized by the patient, who in both situations had an attitude of revolt towards abandonment, which could be interpreted as evidence of unresolved autonomy from childhood. "I seek gratification through a relationship with someone else."

The defensive mechanisms he used frequently were denial, denying both the existence of the disorder and the severity of the behaviors and situations. "My problem is the only problem of humanity, namely unconsciousness;" and rationalization, considering that his behaviors were due to the circumstances or other people. "She brought me the money. It is not stupid who receives, it is stupid who gives."

4.3. Psychodynamics of antisocial traits

V's actions were dominated by impulses, their control being minimal or even non-existent in situations that triggered in him the desire to act immediately on negative external stimuli.

Thus, his behavioral response during the meeting with G's father was an aggressive drive, which was not preceded by a careful thought process, which could be interpreted as a deficit of the patient's ego.

The inability to show trust in his interpersonal contacts was noticeable by the presence of suspicion indices, "I admit that their desire to hurt me seemed too exaggerated." And the desire to fight for fairness, which was manifested in his struggle with the system.

Aggressive elements were present in contexts that caused him feelings of insecurity and contradicted his own expectations projected on external reality. Also, their association could be analyzed both with the self-destructive acts that appeared after the separation from M and with the narcissistic elements present in the attempt to stabilize his emotional life.

4.4. Psychodynamics of narcissistic features

In V's case, the narcissistic traits could be interpreted as defense mechanisms, which made it easier for him to maintain a positive self-image, even in unfavorable contexts. Thus, the attitudes of superiority could represent the patient's prerogative, being used to increase self-satisfaction, emphasizing through both interpersonal qualities. "I had the power of influence." and intellectual ones, "I was aware of my intelligence."

The narcissistic traits could be related to feelings of shame that appeared when various aspects seem discrepant with the ideal apparent self-image, feeling in these contexts a violation of his desire to be seen by others in accordance with his own expectations.

4.5. Differential diagnosis for Borderline

The patient presents the following symptoms: notes of mistrust, hostility, aggression, superior behavior, and attitude. These may indicate Antisocial Personality Disorder, Narcissistic Personality Disorder, and Paranoid Personality Disorder.

Antisocial personality disorder - This diagnosis is manifested mainly through aggressive impulses and hostile attitudes, which are present since childhood.

Narcissistic personality disorder - In V's case, the symptoms are manifested in order to form a stable self-identity, which would allow him to maintain high self-esteem, and can represent a defense mechanism.
Paranoid personality disorder - The manifestation of this side of his personality is present in the form of intense and constant suspicion, which leads him to a series of actions carried out with the aim of fulfilling justice, observable through the fight for justice in court proceedings.

Patients with borderline personality disorder can be problematic because they may have "storms of affection" and require considerable attention [Kaplan & Sadock, 2001]. The American Psychiatric Association's practice guide recommends psychotherapy as the primary treatment for Borderline personality disorder, with pharmacotherapy as an adjuvant to treatment [APA, 2001].

In V's case, treatment could involve mixed, supportive, and exploratory psychotherapy to support the process of stabilizing symptoms. This can lead to the formation of positive coping mechanisms to help him with the management of situations that may be stressful, thus facilitating the management of both emotional and behavioral reactions. Also, setting boundaries and overcoming suicidal ideation requires increased attention in this approach. Thereby, controlling aggressive impulses and minimizing sensitivity to rejection can be beneficial steps towards a better adaptation to external factors. It may also be necessary to be prescribed a psychopharmacological treatment to stabilize the emotional state and control his impulses, in order to provide a complete therapeutic approach.

The risk of suicide is increased in borderline patients, their self-harming behavior including impulsive behavior that is potentially dangerous (excessive alcohol consumption, risky sexual behaviors), deliberate self-harming behavior (shallow cutting or burning), suicide attempts, and successful suicide [Oldham, 2006], that is why it is necessary to implement a therapeutic approach focused on developing positive defense mechanisms, which would allow him to overcome situations with negative repercussions.

4.6. Conclusion

The patient presents a Borderline personality structure with obvious paranoid features, narcissistic tendencies, and elements specific to an antisocial personality. The development of the diagnosis was facilitated by both the presence of the heredocolateral antecedents, and a series of traumas such as the rigid living environment, family quarrels, and alcohol consumption from an early age. Also, these aspects were doubled by the unwanted separation from his attachment figure at a young age, which made him negatively internalize the separations from his partners during adolescence, outlining his fear of abandonment. These elements formed an emotional instability for the patient on the basis of which his actions, dominated by impulses, non-compliance, aggressive and self-destructive tendencies, were manifested.

In this case, can be observed V's reluctance regarding the diagnosis, not being convinced of its truth value. This reluctance is doubled by the lack of insight about his own behavior and contraventions, as well as the seriousness of his current situation, to which is added the permissive attitude of his parents. All these aspects are maintained by the lack of adequate treatment, thus greatly increasing the risk of adopting dysfunctional behaviors and committing aggressive acts, harming himself and others.

Considering, the patient's self-destructive behaviors, impulsiveness, and multiple addictions, in the absence of appropriate treatment, psychotherapy, and/or pharmacological treatment, several future complications may occur, that is why it is necessary to implement a therapeutic approach focused on developing positive defense mechanisms, which would allow him to overcome situations with negative repercussions, preventing future problems with the law, self-harm, aggressive and maladaptive behaviors, and even suicide attempts.

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Frequency of Placenta Previa on Ultrasonography in Females with History of Caesarean Section

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Abstract
Background: Placenta previa (P.P) is a condition where the lower edge of the placenta lies close to the internal os. It may partially or completely cover the internal os. Objectives: To determine the frequency of placenta previa on ultrasonography in females with history of Caesarean section. Methodology: This descriptive study was held in Ghurki Trust Teaching Hospital Lahore and Tehsil Headquarter Hospital, Pattoki. Convex Probe Esotae 2.5 5-7MHz and Logiqv3 (5-7MHz) was used in the study. 140 pregnant women with history of previous Caesarean section were included in the study and were examined through convenient sampling. Data was collected after signing the consent form. Statistical software for social sciences (SPSS version 22.0) is used for the analysis of data. Results: According to the data analysis, minimum age patient was of 18 years and maximum age was 41 years. 37(26.4%) women had 1 previous Caesarean section. 57(40.7%) women had 2, 31(22.1%) women had 3, 15(10.7%) had 4 of previous Caesarean sections. 86(61.4%) women had a history of bleeding. 54(38.6%) women had no history of bleeding. According to analysis of placenta previa, 126(90.0%) women did not have a placenta previa and 14(10.0%) women had placenta previa. Cross tabulation analysis between frequency of patients with placenta previa and previous Caesarean cases evaluated that 126 patients with previous Caesarean rate did not placenta previa confirmed on ultrasound whereas 14 patients with previous Caesarean section had placenta previa on ultrasound. Conclusion: Placenta previa is seen in ten percent of subsequent pregnancies in females who have a history of previous Caesarean section.

Keywords: Placenta Previa, Caesarean Section, Ultrasonography

Introduction

Placenta previa is defined as placenta lying entirely or in part in the lower uterine segment. Its incidence is about 0.28–2%.(Sakornbut et al., 2007) In local studies frequency of 0.51–3.5% has been reported.(Gilliam et al., 2002) Advancing maternal age, multiparity, previous Caesarean sections , miscarriages, uterine curettage, cocaine use , smoking and previous history of placenta previa have all been attributed as risk factors for placenta previa.(Hossain

et al., 2004) In singleton pregnancies, the most common identifiable etiological factor is previous uterine damage due to repeated pregnancies or surgical procedures.(Crane et al., 2000) Placenta previa (P.P) is a condition where the lower edge of the placenta lies close to the internal os. It may partially or completely cover the internal os.(Cox et al., 2005) It is found to complicate 0.3% - 0.8% of all pregnancies worldwide.(Cunningham et al., 2005) The major cause of vaginal bleeding in the 2nd and 3rd trimester is placenta previa.(Cunningham et al., 2014) Placenta previa is an infrequent but life-threatening complication of pregnancy when a placenta completely or incompletely covers the internal cervical os, thereby complicating the normal vaginal delivery.(Faiz and Ananth, 2003) Diagnosis of placenta previa by sonography is a simple, safe and accurate method. Transvaginal sonography may be used to investigate placental localization at any time in pregnancy when the placenta is thought to be low lying. It is significantly more accurate than transabdominal sonography and its safety is well established.(Oppenheimer et al., 2007) After mid-pregnancy, the risk of persistence appears to be higher. Placenta previa at 15-19 weeks, 20-23 weeks, 24-27 weeks, 28-31weeks and 32-35 weeks, persisted until delivery in 12%, 34%, 49%, 62%, 73% respectively.(Dashe et al., 2002).

This study intends to describe the frequency of placenta previa in patients who have previously undergone lower segment Caesarean sections which in turn may help to establish new screening test criteria and also help in generation of further hypotheses and research questions.

Methodology

This descriptive estudy was held in Ghurki Trust Teaching Hospital Lahore and Tehsil Headquarter Hospital, Pattoki. Convex Probe Esotae 2.5 5-7MHz and Logiqv3 (5-7MHz) was used in the study. 140 pregnant women with history of previous Caesarean section were included in the study and were examined through convenient sampling. Data was collected after signing the consent form. Statistical software for social sciences (SPSS version 22.0) is used for the analysis of data.

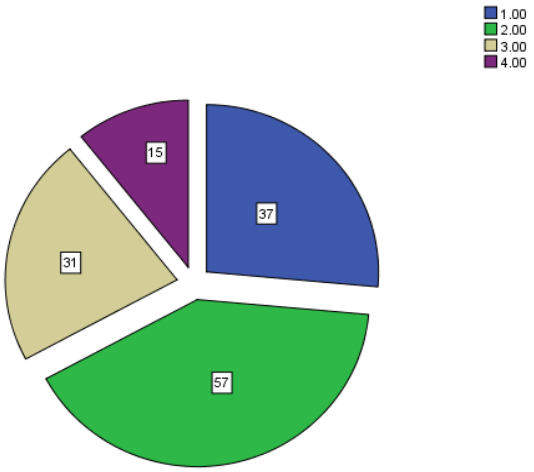
Results

This is a descriptive study. Data of total of 140 patients was recorded. According to the data analysis, minimum age patient was of 18 years and maximum age was 41 years. 37(26.4%) women had 1 previous Caesarean sections. 57(40.7%) women had 2, 31(22.1%) women had 3, 15(10.7%) had 4 of previous Caesarean sections. 86(61.4%) women had a history of bleeding and 54(38.6%) women had no history of bleeding. According to analysis, 126(90.0%) women did not have a placenta previa and 14(10.0%) women had placenta previa. Cross tabulation analysis between frequency of patients with placenta previa and previous Caesarean cases evaluated that 126 patients with previous Caesarean rate did not have placenta previa confirmed on ultrasound whereas 14 patients with previous Caesarean section had placenta previa on ultrasound.

Table 1: Number of previous Caesarean section

Number of Caesarean cases	Frequency	Percent
1.00	37	26.4
2.00	57	40.7
3.00	31	22.1
4.00	15	10.7
Total	140	100.0

According to Table 1 : Analysis of number of previous caesarean section 37(26.4%) women had 1 case of Caesarean. 57(40.7%) women had 2, 31(22.1%) women had 3, 15(10.7%) had 4 cases of Caesarean cases.

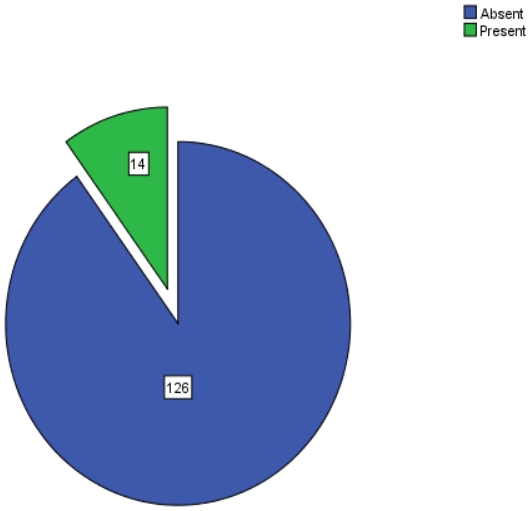


Graph 1: Graphical representation of number of previous Caesarean section among women

Table 2: Frequency of subjects with or without Placenta previa

Placenta Previa	Frequency	Percent
Absent	126	90.0
Present	14	10.0
Total	140	100.0

According to Table 2: Frequency of placenta previa, 126(90.0%) women had not confirmed placenta previa and 14(10.0%) women had placenta previa out of 140(100%).



Graph 2: Graphical representation of frequency of placenta previa

Table 3: Placenta Previa * No of C-section Crosstabulation

			No of C-section				
			1.00	2.00	3.00	4.00	Total
Placenta Previa	Absent	Count	33	52	27	14	126
		% within Placenta Previa	26.2%	41.3%	21.4%	11.1%	100.0%
	Present	Count	4	5	4	1	14
		% within Placenta Previa	28.6%	35.7%	28.6%	7.1%	100.0%
Total		Count	37	57	31	15	140

	% within Placenta Previa	26.4%	40.7%	22.1%	10.7%	100.0%

Table 3: explains the relation between frequency of placenta previa and frequency of Caesarean section among women. Out of 126 women who did not confirmed placenta previa, 3(26.2%) had 1 Caesarean case, 52(41.3%) had 2 previous Caesarean cases, 27(21.4%) had 3 and 14 (11.1%) had 4 previously Caesarean cases. Similarly, out of 14 confirmed cases, 4(28.6%) women had 1, 5(35.7%) had 2, 4(28.6%) had 3 and 1(7.1%) case had 4 previous Caesarean cases.

DISCUSSION

In this study, data of total of 140 patients with the history previous Caesarean sections history was controlled. According to the data analysis, minimum age patient was of 18 years and maximum age was 41 years. 37(26.4%) women had 1 previous C-section. 57(40.7%) women had 2, 31(22.1%) women had 3, 15(10.7%) had 4 of previous Caesarean sections. 86(61.4%) women had a history of bleeding. 54(38.6%) women had no history of bleeding. According to analysis of placenta previa, 126(90.0%) women did not have a placenta previa and 14(10.0%) women had placenta previa. Cross tabulation analysis between frequency of patients with placenta previa and previous Caesarean cases evaluated that 126 patients with previous Caesarean rate did not placenta previa confirmed on ultrasound whereas 14 patients with previous Caesarean section had placenta previa on ultrasound.

The frequency of Caesarean section is increasing, worldwide with a parallel rise in maternal mortality and mortality. The higher incidence of Caesarean delivery today is strongly associated with greater frequency of placenta previa.(Warshak et al., 2006)

A study done by Farahnaz Keshavarzi showed that 98 out of 2696 cases with history of Caesarean delivery had placenta previa. Many studies conducted around the world confirm a 2 to 5 fold increase risk of placenta previa with previous history of C-section.(Getahun et al., 2006) The association of placenta previa with previous C-section (3.63%).(Silver et al., 2006) In our study, only and 14(10.0%) women had placenta previa. (Garmi and Salim, 2012) According to this study 23.5% women with P.P are more than gravida 3 while Shaukat found 60.6% women with P.P are more than gravida 5.(Nasreen, 2003) According to our study, 37(26.4%) women had 1 case of Caesarean. 57(40.7%) women had 2, 31(22.1%) women had 3, 15(10.7%) had 4 cases of Caesarean cases. 86(61.4%) women had a history of bleeding. 54(38.6%) women had no history of bleeding. According to analysis of placenta previa, 126(90.0%) women had placenta previa and 14(10.0%) women had not. In my study, increasing rate of Caesarean section did not lead to an increased frequency of placenta previa.

Conclusion

Placenta previa is seen in ten percent of subsequent pregnancies in females who have a history of previous Caesarean section.

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Protein and Iron Bioavailability, Perception, Menstrual Cycle as Adolescent Girls' Anemia Factors

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Abstract
Adolescent girls are one of the groups of people who is prone to iron nutrient deficiency. Iron is required as a substitute for iron lost due to the menstrual cycle. This research aims to determine the trigger factors of anemia in adolescent girls who become participants of the prevention and control program of anemia. This type of research is an observational research with cross sectional design and using statistical test of chelstle method of Mantel Haentzel and OR value for its meaning. The results shows there are four significant triggers of anemia that is perception of adolescent about nutrition (OR = 2,24; 95% CI = 1,05 - 4,76), adherence to TTD (OR = 2,49; 95% CI = 1.11 - 5.58), protein consumption levels (OR = 3.27, 95% CI = 1.57 - 6.84), iron intake (OR = 2.81; 95% CI = 1.30 - 6.05), and duration of menstrual bleeding (OR = 8.08; 95% CI = 1.05 - 61.89). The distribution of blood booster tablets or *tablet tambah darah* (TTD) needs to be intensified again, accompanied by an emphasis on the benefits of TTD tablets for young women, and to continue to consume independently when the distribution of TTD is terminated. In conclusion, adolescent girls are prevalent to iron nutrient due to menstrual cycle. Therefore, nutrition counseling should also be given besides consuming fresh foods rich in protein and iron as well as vegetables and fruits, because both foods contain vitamin C which greatly helps the absorption of iron in the body.

Keywords: Adolescent Girls, Anemia, Nutrition, Risk Factors

1. Introduction

Adolescent girls are group of people who is to iron deficiency because they are in a peak growth. The need for iron in a high amount is needed, especially for basal metabolism. The rapid growth in this phase has the consequence in the increase of the need for nutrients. In this phase, it is often found that adolescent girls prefer strict diets that tend to deviate. More than 50.0% of the incidence of anemia is caused by iron deficiency. Low iron consumption is considered as major cause of suffering from anemia (Jamnok et al., 2020; Miller, 2013). There is a relationship between protein intake and anemia (Gasong et al., 2019). Low protein intake has the risk 3.48 times greater for suffering from anemia. Another factor that also contributes to anemia is the low absorption

of iron from food. The absorption of iron requires an acidic environment with vitamin C as the reductors. Besides, Vitamin A is required in hematopoiesis.

The balance of iron in the body is important for metabolism. The amount of daily turnover of iron is 35 mg, and not all of it comes from food. Around 34 mg is obtained from the destruction of old red blood cells that is filtered by the body to utilize again in form of new red blood cells. The impact of anemia on adolescent girls are stunting, susceptibility to infection, decreased immune system, decreased fitness or freshness, decreased enthusiasm for learning and achievement (Chaparro & Suchdev, 2019; Wayan et al., 2020).

The modern lifestyle of adolescents in today's time is commonly in line with society, tends to be with the pattern of low iron bioavailability. They consume more rice, tubers, nuts, and eat less meat, chicken, or fish, which are low in vitamin C. The regular lifestyle that is visible is like food restrictions up to uncontrolled eating habits. Implementation of dietary restrictions arise because of concerns with obesity. On the other hand, food supplements are now an alternative for adolescent girls to consume. Nutritional status, described as body mass index (BMI), is known to have a positive correlation with hemoglobin concentration. Low BMI or underweight body has 1.5 times the risk of suffering from anemia. Clean and healthy living behavior or *Perilaku Hidup Bersih dan Sehat* (PHBS) is one of the leading programs that has been disseminated for a long time. The main goal is to form healthy behavior to avoid infectious diseases such as worm infestation. Approximately 50.0% of the rural population, who suffer from anemia caused by iron deficiency and 40% of iron deficiency anemia accompanied by hookworm infection (Rodríguez-Guardado et al., 2013; Ngui et al., 2012). The data of anemia and its risk factors for adolescent girls in several areas are relatively small, not comparable to the very high number of adolescent girls (18.4%) and keep increasing. The prevalence of anemia in adolescent girls is 22.3% (Dinas Kesehatan Provinsi Bali, 2014).

2. Method

This observational study with a cross sectional design was conducted from May to August 2017. The research was conducted in Badung Regency, Bali with the target population was female students who participated in the anemia prevention and control program. The number of samples was 200 people who were selected simply and randomly.

The data collection includes the incidence of anemia. In collecting the data, this research used an instrument in the form of the SQ-FFQ form (Semi Quantitative Food Frequency Questioner) to assess the bioavailability of nutrient consumption; a questionnaire to collect data on knowledge, perceptions, hygiene-healthy behavior, menstrual cycle, information on worms infestation; and digital laboratory tools for the determination of hemoglobin levels. The weight measuring instrument used is a digital weighing scale Fesco, while for height, we used Microtoise One med.

The knowledge and perception data were collected through interviews by filling in answers to the available questionnaires or lists of questions. Also, the data on iron bioavability and food supplements were collected by doing interviews using the SQ-FFQ form. Meanwhile, the data on PHBS were collected by interview covering habits of maintaining body hygiene including nails, hair and teeth. The worm infestation data were collected by doing interviews regarding the habit of consuming deworming drugs in a certain period (frequency, and type or brand of the drug consumed). Next, the data on Body Mass Index were collected through weighing and measuring body height, which were compared with the ideal standards. The data of menstrual cycle is done by interviewing the participants using the menstrual description list form. The last but not least, the hemoglobin data were collected by doing laboratory examination methods using the Esaytouch device.

Since all the following variables was converted into dichotomous variables (there are only two categories), Chi-Square statistical analysis is used to analyze the relationship between various independent variables and the dependent variable on anemia (Mantel Haentzel).

3. Results

Although it is not explicitly included in high school curriculum, understanding about nutrition has become general knowledge which can be obtained from various other learning sources (Vlieger et al., 2020; Craigieet al.l, 2011). The sample's knowledge and perceptions of nutrition are considerably various. The samples having high knowledge (48.8%) are almost the same as the low ones (51.2%), so are their perceptions of nutrition. The number of samples that tend to have positive perception (48.3%) is almost the same as those with negative perception (51.7%).

Not all samples have demonstrated clean and healthy living behavior (PHBS). A small percentage of the sample (25.4%) applies regular hygiene and sanitation. Besides, those who are accustomed to consuming supplements are much less, that is only 7.5% as well as consumption of deworming drugs with only 14.9% of the sample and even then it was not done regularly every 6 months. On the other hand, most of the samples (79. 6%) had taken blood booster tablets or *tablet tambah darah* (TTD) as shown in Table 1. This is because the program for giving such tablets to adolescent girls has been conducted through the School Health Unit or *Usaha Kesehatan Sekolah* (UKS).

Table 1: Sample distribution for clean and healthy living behaviour

Variable	**Category**	**Observation Results**	
		F	**%**
Sanitation and Hygiene Behavior	Unorganized	150	74.6
	Well-organized	51	25.4
	Total	**201**	**100.0**
Supplement Consumption	Yes	15	7.5
	No	186	92.5
	Total	**201**	**100.0**
Blood Booster Consumption	Yes	160	79.6
	No	41	20.4
	Total	**201**	**100.0**
Deworming Drug Consumption	Yes	30	14.9
	No	171	85.1
	Total	**201**	**100.0**

The implementation of PHBS will have an impact on the immune system to resist the diseases. Table 2 shows the results of observations found most samples suffered from diarrhea during the past month and it was only 9% of the sample.

Table 2: Sample Distribution of Disease

Experiencing Diarrhea for the past month	**Observation Result**	
	f	**%**
Yes	18	9.0
No	183	91.0
Total	**201**	**100.0**

In this study, the menstrual cycle of the sample was also observed because it seemed to play a role as a trigger for anemia to adolescent girls. Table 3 shows half of the samples (67.3%) experienced menstruation regularly once a month and most of them (84.6%) had period length for more than 3 days. Also, the level of consumption of sample nutrients still does not meet the requirements for nutritional balance.

Table 1: Sample Distribution of Menstrual Cycle

Variable	Category	Observation Result	
		F	%
Menstrual Period Frequency	Regular	109	67.3
	Irregular	53	32.7
	Total	**162**	**100.0**
Length of period	≤ 3 days	25	15.4
	> 3 days	134	84.6
	Total	**162**	**100.0**

Nearly all samples (95%) consumed proper carbohydrates even more than enough. For protein intake, only about 70.6% of the sample consumes sufficient amounts. Even specifically for the consumption of iron as the main factor for the production of red blood cells, only 50.2% of the sample has sufficient amount of iron intake. Moreover, Vitamin C, a nutrient that helps the absorption of iron, has almost reached the level of consumption according to balanced nutrition guidelines. Table 4 shows the data that only 16.4% of the sample consumed less Vitamin C than the recommended amount. The nutritional condition of the sample is quite good. Most of the samples have normal nutritional status.

Table 2: Sample Distribution of Nutrient Consumption Levels

Nutrients	Category	Observation Result	
		F	%
Energy	Deficient	37	18,4
	Sufficient	164	81.6
	Total	**201**	**100.0**
Carbohydrate	Deficient	10	5.0
	Sufficient	191	95.0
	Total	**201**	**100.0**
Fat	Deficient	86	42.8
	Sufficient	115	57.2
	Total	**201**	**100.0**
Protein	Deficient	59	29.4
	Sufficient	142	70.6
	Total	**201**	**100.0**
Iron	Deficient	101	50.2
	Sufficient	100	49.8
	Total	**201**	**100.0**
Vitamin C	Deficient	33	16.4
	Sufficient	168	83.6
	Total	**201**	**100.0**

A small proportion of the sample were skinny (2.5%), as well as the fatty ones, only 10% of the sample as shown in Table 5. According to the results of the hemoglobin examination that has been carried out, the percentage of anemia problems is classified as low, as it is only 37 samples (18.4%) suffer from anemia. Table 6 shows that those with anemia, 56.8% of the sample had low nutritional knowledge, while 50% of the group without anemia also had low nutritional knowledge. Samples with low nutritional knowledge were more likely to be found in those with anemia. Statistically, this trend proved to be insignificant with a value of χ^2=0.55 (p>0,05).

Table 3: Distribution of Nutritional Status Sample According to BMI/Age Index

Category	**Observation Result**	
	F	**%**
Fatty	20	10,0
Normal	176	87.6
Skinny	5	2.5
Total	**201**	**100.0**

Based on perceptions about nutrition, the tendency for differences in the incidence of anemia between groups is clearer. In the group who had anemia, 67.6% of the sample had negative perceptions, while in the group without anemia, only 48.2% had negative perceptions shown in Table 6. Therefore, the results of these observations found that the sample who had negative perceptions about nutrition was more likely to experience anemia than those who did not. From the results of statistical analysis, there was a significant difference with the value χ^2=4,55 (p≤0,05). There are differences in the incidence of anemia related to the sample's perception about nutrition.

Table 4: Sample Distribution of anemia status according to the level

Variable	Category	Sample of Anemia Status				Total	
		Anemia		No			
		F	%	F	%	f	%
Level of knowledge of nutrition	Low	21	56.8	82	50.0	103	51.2
	High	16	43.2	82	50.0	98	48.8
Total		37	100.0	164	100.0	201	100.0
Trends in perception of nutrition	Negative	25	67.6	79	48.2	104	51.7
	Positive	12	32.4	85	51.8	97	48.3
Total		37	100.0	164	100.0	201	100.0

According to the data about practice of sanitation hygiene, 86.5% of those in the group did not practice regular hygiene and sanitation, and those in the group that did not suffer from anemia, 72% did not practice regular hygiene. This implies that the sample who did not practice regular hygiene and sanitation was more likely to be found in those who had anemia than those who did not. However, statistically the trend of this difference was not significant with a value of χ^2=3.37 (P>0.05).

A contrast result is shown on the habit of consuming supplements. The samples who had anemia, 89.2% did not regularly take supplements, whereas in the samples who did not have anemia, 93.3% did not usually take supplements either. Thus, the data shows that the samples who do not usually take supplements are more likely to not suffer from anemia than those who do. However, it statistically does not show a significant difference with a value of χ^2=0.74 (p>0.05).

This is also found in the consumption of deworming medicine. In the sample group who had anemia, 83.8% of them did not take deworming medicine, whereas in the sample group that did not have anemia there were 85.4% of them did not take deworming medicine. Hence, the data shows that the samples that did not take deworming medicine were more likely did not suffer from anemia than those who did. However, same with the consumption of supplements, this difference was insignificant with a value of χ^2=0.06 (p>0.05).

A different fact is found in the consumption of blood or Iron booster tablets (TTD) as one of the Health Office programs to prevent anemia from adolescent girls. The distribution of iron tablets for adolescent girls has been declared as one of the School Health Unit (UKS) programs so that almost the majority of the sample already consumed such tablets. In the sample group who had anemia, 32.4% of the sample did not consume iron tablets and those in the non-anemia group only 15.9% who did not consume it. Therefore, the samples that did not consume iron tablets were more likely to get anemia than those who did not. This difference was statistically

significant with a value of χ^2=5.14 (p≤0.05). There are differences in the incidence of anemia according to the habit of consuming iron tablets.

Besides, the data on the frequency of menstruation shows such a contrary results. Regarding the irregular menstrual frequency, there was 21.2% of the samples in the group of anemia, and 35.7% was in the group of those who did not have anemia. This means that there were more samples who experienced irregular menstruation in the group that did not experience anemia than the group who suffer from such disease. However, statistics shows that there was no significant difference in the incidence of anemia according to the frequency of menstruation with a value of χ^2=2.49 (p>0.05).

Meanwhile, according to the length of bleeding during menstruation, there were 97% samples who had anemia experienced bleeding during menstruation for more than 3 days and those in the group who did not get anemia, only 79.8% of the sample experienced bleeding during menstruation for more than 3 days. The sample who experienced bleeding during menstruation for more than 3 days was found more in the group that had anemia than the group that did not. The statistical analysis indicates that the difference is significant with a value of χ^2=5.55 (p≤0.05). Thus, there is a significant difference in the incidence of anemia related to the length of bleeding during menstruation.

In the group with anemia, 16.2% of the sample had less energy consumption, while in the non-anemia group, the sample with less energy consumption was higher (18.9%). Samples with less energy consumption were more likely to not experience anemia than those who did. However, this difference was statistically insignificant with a value of χ^2=0.15 (p>0.05).

If it is observed from the protein level, 51.4% of the sample in anemia group were less in protein consumption level, while the sample group that did not experience anemia there were only 24.4% of the sample whose protein consumption level was less. Thus, samples with less protein consumption levels were more likely to be found in the sample group who had anemia than those who did not. Based on statistical analysis, a significant difference is obtained with the value χ^2=10.58 (p≤0.05). There is a significant difference in the incidence of anemia based on the level of protein consumption.

According to the data of fat consumption level, the opposite result is found. 37.8% of the sample in the group suffering from anemia had less fat consumption, while the non-anemia group had more samples that is 43,9% as shown in Table 7. There are more sample in the group who do not have anemia whose level fat consumption is low or deficient than those in the anemia group. However, this difference was not statistically significant with a value of χ^2=0.45 (p>0.05).

Table 5: Distribution of anemia status according to level consumption of sample nutrient

Nutrient	Category	Sample of Anemia Status				Total	
		Anemia		No			
		f	%	F	%	f	%
Energy	Deficient	6	16.2	31	18.9	37	18.4
	Sufficient	31	83.8	133	81.1	164	81.6
Total		37	100.0	164	100.0	201	100.0
Protein	Deficient	19	51.4	40	24.4	59	29.4
	Sufficient	18	48.6	124	75.6	142	70.6
Total		37	100.0	164	100.0	201	100.0
Fat	Deficient	14	37.8	72	43.9	86	42.8
	Sufficient	23	62.2	92	56.1	115	57.2
Total		37	100.0	164	100.0	201	100.0
Carbohydrate	Deficient	1	2.7	9	5.5	10	5.0
	Sufficient	36	97.3	155	94.5	191	95.0
Total		37	100.0	164	100.0	201	100.0
Iron	Deficient	26	70.3	75	45.7	101	50.2

	Sufficient	11	29.7	89	54.3	100	49.8
Total		37	100.0	164	100.0	201	100.0
Vitamin C	Deficient	9	24.3	24	14.6	33	16.4
	Sufficient	28	75.7	140	85.4	168	83.6
Total		37	100.0	164	100.0	201	100.0

The same result is also presented in level of carbohydrate intake. In the group having anemia, 2.7% of the sample had a low level of carbohydrate consumption, while in the non-anemia group, there are 5.5% sample whose level of carbohydrate consumption was low. Thus, there are more samples whose carbohydrate consumption is deficient in the group who did not have anemia than those who did. However, this difference was not statistically significant with a value of χ^2=0.50 (p>0.05).

Contrary to the level of consumption of other nutrients, there is a clear proclivity in the level of iron intake. In the group that had anemia, there were 70.3% of the sample whose iron intake was insufficient, and in the sample group that did not have anemia there were only 45.7% whose level of iron intake was insufficient. Thus, the samples with insufficient iron consumption levels were more likely to be found in the sample group who had anemia than those who did not. Therefore, the statistical analysis shows a significant difference with a value of χ^2=7.27 (p≤0.05). This implies that there is indeed a significant difference in the incidence of anemia when viewed based on the level of iron consumption.

And the last but not least, there was no significant difference at the level of vitamin C consumption. In the group with anemia, 24.3% of the sample had a low level of vitamin C consumption, while in the non-anemia group, the sample whose consumption level was insufficient was only 14.6%. However, this difference was not statistically significant with a value of χ^2=2.07 (p>0.05).

Based on the nutritional status there is a reciprocal tendency so that the correlation between anemia status and nutritional status of the sample becomes difficult to predict. For the sample with obesity, those who did not experience anemia (11.6%) were higher than those who had anemia (2.7%). However, in samples with normal nutritional status, more people had anemia (94.6%) than those who did not (86%) as shown in Table 8. Based on statistical analysis, there was no difference in the incidence of anemia related to the nutritional status of the sample with a value of χ^2=2.66 (p>0.05).

Table 6: Distribution of Anemia Status Based on Sample of Nutritional Status

Nutritional Status	**Sample of Anemia Status**				**Total**	
	Anemia		**No**			
	F	**%**	**f**	**%**	**f**	**%**
Fatty	1	2.7	19	11.6	20	10.0
Normal	35	94.6	141	86.0	176	87.6
Skinny	1	2.7	4	2.4	5	2.5
Total	37	100.0	164	100.0	201	100.0

4. Discussion

There are five factors that trigger significant incidence of anemia, namely perceptions of nutrition, consumption of blood booster tablets, level of protein and iron intake, and bleeding during menstruation (Gautam et al., 2019; Triharini et al., 2018; Thomson et al., 2012; Abbaspour et al., 2014; Sumarlan et al., 2018).

Based on the risk factor analysis, the perception of nutrition has a value of OR = 2.24 with 95% CI = 1.05 - 4.76. This means that significantly samples with negative perceptions of nutrition have 2.24 times greater risk of anemia than those with positive perceptions. Misconceptions in interpreting the appearance of the body such as get fatty, as well as other negative perceptions have the potential for adolescent girls to experience eating disorders or take a strict diet to achieve body goals. Also, misperceptions about body appearance which leads to eating disorders often cause serious health problems such as experiencing malnutrition due to strict diets,

depression, feeling inferior to the environment, mental health problems and even suicide. It is important to note various factors which can affect such thing to happen. Parents' comments regarding the child's appearance, the role of the media, psychological, social, and cultural values in society are some of the factors that need to be considered. All efforts should be done by involving various parties, both private and government as well as parents to provide correct information and as an effort to promote health for children and adolescents to prevent misunderstandings about body appearance and eating disorders (Golden et al., 2021; Leme et al., 2020).

Also the risk factor analysis shows that adherence with iron or blood booster tablets (TTD) intake has a value of OR = 2.49 with 95% CI = 1.11 - 5.58. This means that those who did not adhere with iron tablets intake had 2.49 times greater risk of anemia than those who did. In the guidebook for the prevention and control of anemia in young and eligible women, it is necessary to obtain iron supplementation when food consumption is not sufficient enough to provide the needs of iron. The distribution of iron or blood booster supplement for a certain period of time aims to increase hemoglobin levels rapidly, and it is necessary to continue to increase iron stores in the body. Supplementation of Blood Booster Tablets (TTD) for young and eligible women is one of the efforts of the Indonesian government to meet iron intake. Giving iron tablet in the right dose can prevent anemia and increase iron reserves in the body (Fishman et al., 2000; Ministry of Health of Indonesia, 2016; Finkelstein et al., 2018; Stoffel et al., 2020).

From the risk factor analysis, level of protein consumption has a value of OR = 3.27 with 95% CI = 1.57 - 6.84. This means that significantly the sample whose protein consumption is less than the recommended nutritional adequacy rate has 3.27 times greater risk of anemia than the sample whose protein consumption meets the recommended rate. The percentage of anemia incidence is higher in the elderly who have low protein consumption level than those who consume enough protein (Bianchi, 2015). Low protein intake will interfere with the transport, production, and storage of iron. There are three types of proteins interrelated in the process of transporting and storing iron in the body, namely transferrin, the transferrin receptor 1 (TfR1) and ferritin. Transferrin transports iron to tissues that have transferrin receptors, especially erythroblasts in the bone marrow for the process of hemoglobin formation, so that lack of protein consumption does have a direct impact on the incidence of anemia as a result of failure of hemoglobin formation in the spinal cord (Alamsyah & Andrias, 2016).

The risk factor analysis also notes that the level of iron consumption has an OR = 2.81 with a 95% CI = 1.30 - 6.05. This means that significantly the sample whose iron consumption is less than the recommended nutritional adequacy rate has 2.81 times greater risk of anemia than those whose iron consumption fulfills the recommended rate. This is in line with research conducted by (Astuti, 2010) by obtaining a strong correlation (r = 0.675) between iron intake and hemoglobin levels in 122 children aged 7 to 15 years old in Kulon Progo, Yogyakarta. These synergistic results actually reinforce the fact that low consumption of iron-rich foods can disrupt the formation of red blood cells so that the hemoglobin level in the body decreases which can eventually lead to anemia.

Additionally, the risk factor analysis also shows the length of bleeding during menstruation has a value of OR = 8.08 with 95% CI = 1.05 - 61.89. This means that samples whose bleeding during menstruation were more than 3 days have 8.08 times greater risk of anemia than that of samples whose bleeding were less than 3 days. Similar results were also obtained in the research of (Febrianti et al., 2013) by taking a sample of 250 female students of Madrasah Aliyah Negeri 2 Bogor. The conducted observation found that there was a significant relationship between the length of menstruation and the incidence of anemia in adolescent girls (p value = 0.028). The incidence of anemia in this study was significantly related to length of period. Forty percent (40%) of female students in this study experienced menstruation for more than 7 days. Menstruation more than 7 days is one of the symptoms of menorraghia. Menorrhagia is the medical term for periods with bleeding that is more than normal or longer than normal. Such thing can happen due to hormonal imbalance, ovarian dysfunction, uterine fibroids, polyps in the uterine wall, adenomyosis, intrauterine devices, pregnancy complications, cancer, genetic disorders, consumption of certain drugs, or other medical conditions.

Conclusion

The prevalence of anemia on adolescent girls participating in anemia prevention and control programs is 18.4%. Among the six types of nutrients analyzed for their correlation to the incidence of anemia in adolescent girls, namely energy, carbohydrates, protein, fat, iron, and vitamin C, only the level of protein and iron intake shows a statistically significant difference. Hence, there is indeed a significant difference in the incidence of anemia according to the bioavailability of iron consumption. According to the nutritional status, there is an opposite tendency so that the relationship between anemia status and nutritional status of the sample becomes difficult to predict. Based on statistical analysis, there is also no difference in the incidence of anemia related to the nutritional status. Different things happen from the length of bleeding during menstruation. It is proven that more samples who experienced menstrual bleeding for more than 3 days were found in the anemia group compared to the group that did not suffer from it. Based on statistical analysis, this difference is significant so that that there is indeed a difference in the incidence of anemia based on the length of bleeding during menstruation.

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The Prevalence of Household Catastrophic Health Expenditure in Nigeria: A Rural-Urban Comparison

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Abstract
Background: Catastrophic health expenditure occurs when the burden of Out-of-pocket health expenditure has reached a certain level that a household must forego the expenditure on other basic needs of life to meet the health expenses of its member(s) of the household. Worldwide, over 44 million households suffer annually from financial catastrophe. This study intends to determine the prevalence of household catastrophic health expenditure amongst rural and urban communities in Ekiti, Nigeria. Methodology: This is a comparative cross-sectional study of households within selected rural and urban communities in Ekiti State, Nigeria. A pre-tested interviewer-administered semi-structured questionnaire was used to collect data over a period of 4 months from a sample of 1,000 household heads, using a multistage sampling technique. Data obtained were then entered using the SPSS version 20 and analysed with STATA 12. Two different methodologies were used to calculate household catastrophic health expenditure, with sensitivity analysis done. Univariate analysis were used to describe the population in relation to relevant variables. Result: The prevalence of household catastrophic health expenditure is high using the two methodological calculations. It was significantly higher in the rural areas, 18.5% than the urban areas, 12.8% ($p=0.015$) for first method; it was also higher in the rural areas, 8.3% compared to the urban areas, 2.5% ($p<0.001$) for the second method. Conclusion: Prevalence of household catastrophic health expenditure is high in Nigeria, but worse in the rural areas. It's therefore vital to establish financial and social intervention mechanisms that can protect households from incurring catastrophic health expenditure.

Keywords: Household Catastrophic Health Expenditure, Out of Pocket Payments, Nigeria

1. INTRODUCTION

A departure from health can lead to illnesses, diseases, disability and eventually death (Gordis, 2004). Every person is at risk of falling ill at one point or the other in their lifetime. Also illnesses or diseases are usually

unpredictable necessitating a health-seeking behavior in the individuals or by the household with varied treatment provider options: local dispensary, drug store, pharmacy, alternative healer or spiritualist, traditional birth attendant or herbalist, health centers, clinics, hospitals and other places (Onwujekwe, Chukwogo, Ezeoke, Uzochukwu, 2010). In the health facilities, payment for healthcare services can either be direct or indirect; examples of the payment options includes direct out-of-pocket (OOP) payment, government subsidies, taxation, private and social health insurance schemes, donation and other means (Buiqut, Ettarh, Amenda, 2015). It is the direct out-of-pocket (OOP) payment and other direct payments that may lead to catastrophic health expenditure (CHE), (Buiqut et al. 2015).

Catastrophic health expenditure occurs when the burden of out-of-pocket health expenditure has reached a certain level that a household must forego the expenditure on other basic needs of life to meet the health expenses of one or more member(s) of the household (Olatunya et al., 2015). The World Health Organization (WHO) defines household catastrophic health expenditure (HCHE) as health expenditure (HE) greater than or equal to 40% of the household's non-subsistence income. (Ke, David, Guy, Ana, 2005 and Xu, Evans, Kawabata, Zeramdini, Klavus , Murray, 2003).

Despite the increase in the amount spent on health globally, the prevalence of HCHE is increasing especially in the developing countries (Arce 2019 and World Health Organization 2016). The global average health expenditure per person is 948USD (WHO 2012) while that of Nigeria is about one-eighth of the global average; 118USD (WHO 2016). Also, the Nigerian population (World Bank, 2016) was about 182.2million in 2015 with a gross domestic product (GDP) of 481.1billionUSD (World Bank, 2016) and per capita GDP of 2,640USD (World Bank, 2016). In Nigeria, the private expenditure on health accounts for about 70% of total health expenditure with out-of-pocket payment on health, making up 90-96% of the private expenditure on health, (Onwujekwe, Uzochukwu, Onoka, 2011 and Adisa, 2015).

Low and middle income countries have about 84% of the world's population, also they have 90% of the world's disease burden but they account for only 12% of the world resources spent on health (Brinda, Andres, Enemark, 2014). Most of the governments in the developing countries failed to spend adequately on health, spending less than 9% of their budget on health,(Brinda et al., 2014) which is not in line with the Abuja declaration(WHO, 2011). This, therefore push the majority of the populace to spend a larger part of their income on health (Brinda et al., 2014). The lack of adequate prepayment or health insurance system in many developing countries has allowed members of households with illnesses or diseases to experience CHE, and in the worst cases, they experience poverty and impoverishment (Rashad and Sharaf, 2015). There have been several definitions of household catastrophic health expenditure (HCHE) in the past; Wagstaff and Doorslear, in a World Bank study described CHE as an overshoot of healthcare expenditure, beyond a critical threshold of 10% of a household's total expenditure (Aditi, 2014). World Health Organization's (WHO) multi-country study described HCHE using the household's capacity to pay for healthcare rather than on total income. Capacity to pay was described as income left after removing food consumption. The critical threshold was set at 40% or more of the non-food consumption or non-discretionary income (Xu et al., 2003).

This study's operational definition of HCHE is the percentage of direct health cost exceeding 10% of the household expenditure of the income over a one year period (CHE_1); and CHE_2: the percentage of the direct health cost greater than or equals to 40% of the non-food income over a one year period (Knaul, Wong, Arreola-ornelas, Mendez, 2011).

According to a multi-country WHO study in 2003, $HCHE_2$ prevalence ranges from 0.01% to 10.5% (Xuet al.l, 2003). It was observed that most of the developed countries had advanced health system that protects the household from CHE_2 (Xu et al., 2003). A comparative analysis among 12 Latin American and Caribbean countries revealed a prevalence ranging between 0.4% to 11 %,(Knaul et al., 2011) also CHE_2 prevalence among older people in six low and middle-income (LMIC) countries ranges on average between 3.2% in Mexico to 15% in China (Brinda, Altermann, Kowal, Enemark, 2014). In Turkey, a study revealed only 0.6% developed CHE_2 (Yardim MS, Cilingiroglu N, Yardim N, 2010). Not much is known about the prevalence of HCHE however, in the developing countries (Xu et al., 2003 and Adisa, 2015). The prevalence of HCHE within the African region reported by Buiqut in Kenya's slum ranges between <1.52% for CHE_2 to 22.80% for CHE_1

(Buiqutet al.l, 2015) and likewise Brinda reported the $HCHE_2$ prevalence of 18% among people in a study in Tanzania (Brindaet al.l 2014). In the southern part of Africa, a study in Botswana and Lesotho revealed the percentage of people with household CHE_2 was 7% and 1.25% respectively (Akinkugbe, Chama-Chiliba, Tlotlego, 2012). In Burkina Faso in the western part of Africa, study there revealed 8.66% of the people had CHE_2 (Su, Kouyate, Flessa, 2006).

The prevalence of household CHE_2 in Nigeria from a study in Anambra and Enugu reveals a prevalence of 27% (Onwujekwe, et al. 2011 and Onwujekwe, Hanson, Uzochukwu, 2012). In 2010, also in Anambra and Enugu States of Nigeria, another study by Onoka revealed household CHE_2 prevalence was 15% (Onoka, Onwujekwe, Hanson, Uzochukwu, 2010). A study by Ilesanmiet al.l revealed that $HCHE_2$ prevalence ranges between 2.5%-10.9% among urban resident of Oyo state Nigeria (Ilesanmi, Adebiyi, Fatiregun, 2014). Another study revealed CHE_1 prevalence of 9.6% among elderly household in Nigeria (Adisa, 2015). Amakon revealed a prevalence of $HCHE_2$ to be 27% in Nigeria (Amakom, and Ezenekwe, 2012). Among TB patient, 44% of them experienced $HCHE_2$ in a study by Ukwaja (Ukwaja, Alobu, Abimbola, Hopewell, 2013). The only study in Ekiti state was by Olatunyaet al.l which studied the financial impact of Sickle cell disease on household; CHE was 20.7% (Olatunya et al, 2015).

Over 150 million people or 44 million households suffer annually from financial catastrophe mainly because of OOP expenditure of healthcare services (World Health Organization 2016, World Health Organization, 2016 and Bennett, Ozawa, Rao, 2010). Worldwide, 32% of total healthcare expenditure is derived from OOP payments (WHO, 2016). Also, monitoring of HCHE is one of the key indicators for measuring Universal Health Coverage (UHC), and National Health Insurance Scheme (NHIS) coverage; high level of it can serve as a strong reason for the policymakers to embark on a wider coverage of universal healthcare and NHIS; whose primary aim is to reduce HCHE (Ilesanmi, et al, 2014 and WHO, 2016). There is an urgent need to have a healthcare financing policy guide in Ekiti state to help protect indigenes from the financial hardship caused by the cost of seeking healthcare. Policymakers in Ekiti state and Nigeria at large equally need adequate data to take action and informed decisions. Hence, this study intends to determine the prevalence of HCHE amongst rural and urban communities in Ekiti. It is hoped that the findings of this research will add to the existing body of knowledge on HCHE in Ekiti state, Nigeria, which will assist policymakers in identifying and targeting vulnerable groups with appropriate and evidence-based interventions.

2. METHODS AND MATERIALS

This is a comparative cross-sectional study design that involved both rural and urban households within selected communities in Ekiti State, in the southwestern region of Nigeria. Nigeria is the largest country in Africa by population, accounting for 47% of the entire West African population (World Bank, 2016) with a poverty rate of 62.6%, human development index (HDI) of 0.47 and per capita income of 1,280USD (United Nation Development Programme, 2016). Household head living in the community within the last 12 months and who were more than 18years of age were included in the study. All household heads that were already enrolled in health insurance schemes and those were visitors to the selected communities were excluded.

The sample size for the study was determined for each group (rural/urban) by using the Fisher's formula for calculating the sample size of comparison of two proportions (Jekel, Katz, Elmore, 2001), using a proportion of urban household facing HCHE (33.1%) (Ilesanmi, Adebiyi, Fatiregun, 2017), and a proportion of rural household facing HCHE (24.4%) (Ilesanmi, et al., 2017). After compensating for 10% non-response, the calculated sample size was 467. This was rounded up to 500 household heads per group, and a total of 1000 household heads were interviewed in the study. A multistage sampling technique was used to select respondents, starting with the selection of the local government areas, then the wards, then the enumeration areas and finally the households.

The data was collected from July 2018 to October 2018 in the selected communities. A pre-tested interviewer-administered semi-structured questionnaire was used to collect data. The contents of the questionnaire were adapted from several studies including the World Health Survey 2002 (household questionnaire) by the WHO (Ilesanmi et al, 2014, Onwujekwe et al, 2010, WHO, 2002, World Bank, 1996). Face and content validity was

assured by an expert in the field of health economics. Cronbach's alpha test was done, and the alpha coefficient for 19 items is 0.728, suggesting the items have a high internal consistency (Douglas and Thomas, 2014).

The data obtained were then entered using the IBM SPSS version 20. Data cleaning was done for missing data to improve data quality, and data was analyzed with STATA 12. $HCHE_1$ was calculated by using a ratio (at a threshold of) health expenditure (>10%) to total household expenditure, while $HCHE_2$ was calculated by using a ratio of household health expenditure (greater than or equal to 40%) to the non-food household expenditure. Sensitivity analysis of the threshold of HCHE was done to improve the robustness of the study (for $HCHE_1$ the range of thresholds was set at 5%, 10%, 15%, and 20%; while for $HCHE_2$ it was set at 20%, 30%, and 40%. The household socio-economic status was determined through the household wealth scores, based on the ownership of some household asset using Principal Component Analysis; households were then divided into five quintiles based on their wealth scores, at one end 'the poorest' and at the other end "the richest."(Vyas, and Kumaranayake, 2006)

Data analysis was conducted using univariate analysis involving frequency tables, graphs, figures and texts and summary statistics such as mean, standard deviation and simple percentages to describe the population in relation to the relevant variable.

Operational definition for $HCHE_1$ and $HCHE_2$ were used [18] and calculated as follows.

A. Firstly, using the methodology of Xu: $HCHE_2$ occurs when the expenditure on healthcare is greater than or equals to 40% of the household's capacity to pay (CTP). CTP is the difference between total expenditure and subsistence expenditure (SE). Subsistence expenditure was calculated using the following method (Rezapour et al, 2013)

1) The food expenditure share ($FoodExp_h$)(Joglekar, 2008) for each household was generated by dividing the household's food expenditure by its total expenditure.

$$FoodExp_h = Food_h / Exp_h \quad \ldots\ldots 1$$

2) The equivalent household size for each household was generated as:

$$Eqsize_h = hhsize_h^{\beta} \quad \ldots\ldots 2$$

$Eqsize_h$ =equivalent household size

$hhsize_h^{\beta}$ is the actual household size; beta β reflect the economics of scale effect of large household; β=0.56

3) Equalized food expenditures for each household was obtained from the following

Formula:

$$Eqfood_h = food_h / eqsize_h \quad \ldots\ldots 3$$

$Food_h$= Food expenditure of the household

$eqsize_h$=equivalent household size

4) The studied households were sorted according to the food expenditure share of the total household expenditure, and divided into one hundred equal parts. The fiftieth percentile across the whole sample is selected.

5) The calculating mean of the food expenditure in the fiftieth percentile gives the subsistence expenditure per capita, which is also the poverty line (PL).

6) The subsistence expenditure for each household was, separately, computed as:

$$Se_h = pl * eqsize_h \quad \ldots\ldots 4$$

7) A household was regarded as poor (=1) when its total household expenditure was smaller than its subsistence spending, otherwise, it was considered as comfortable (=0).

$$If\ Exp_h < Se_h \rightarrow Poor_h = 1 \quad \ldots\ldots 5$$

$$If\ Exp_h \geq Se_h \rightarrow Poor_h = 0 \quad \ldots\ldots 6$$

8) At this stage, those households that fall below the poverty line only because of the health expenditures were counted.

$$If\ Exp_h \geq Se_h,\ (Exp_h - oop_h) < Se_h \rightarrow impoveris_h = 1 \quad \ldots 7$$

$$If\ Exp_h \geq Se_h,\ (Exp_h - oop_h) \geq Se_h \rightarrow imPoverish_h = 0 \quad .. 8$$

9) Household CTP: Household non-subsistence or household capacity to pay

$$CTP = exp - SE_h \quad if\ SE_h \leq food_h \quad \ldots\ldots 9$$

$$CTP = exp - food_h \quad if\ SE_h > food_h \quad \ldots\ldots 10$$

The ratio of OOP_h to CTP=OOP_h/CTP = health expenditure/Household CTP

$Cata_h$=1 if OOP_h/ CTP ≥ 0.4……11
$Cata_h$ =0 if OOP_h/CTP< O.4……12

B. For the second definition of HCHE ($HCHE_2$) it is a ratio of household expenditure on health to total household expenditure; greater than 10% was considered catastrophic.

$Cata_h$=1 health exp_h/total household expenditure >10%……13
$Cata_h$=0 health exp_h/total household expenditure <10% (Joglekar, 2008)..…14

Research approval for the study was obtained from the Ethics and Research Review Committee of the Federal Teaching Hospital Ido-Ekiti (ERC/2017/04/03/47A). A written consent for the interview was obtained from each respondent after giving them an explanation of the nature, purpose, and benefit of the study. Also, confidentiality and autonomy of respondents were maintained.

3. RESULTS

The total number of the household (HH) heads was nine hundred and seventy-one (971) out of the one thousand (1000) respondents interviewed giving a response rate of 97.1% (figure 1); 496 (51%) of the respondents were in the rural areas while 475 (49%) were in the urban areas. The household size in the rural area was 4.8±1.3 while the urban area was 3.4±1.1, averagely 4.2 ±1.2 (SD) for this study.

Table 1: Socio-demographic characteristics of the household heads in the rural and urban communities of Ekiti State, Nigeria

Socio-demographic variables	**Location**		
	Rural **n = 496** **Freq. (%)**	**Urban** **n = 475** **Freq. (%)**	Statistical indices
Age groups of Household Head (in years)			
<40	264(53.2)	281(59.2)	$\chi 2$= 17.434
40 - 59	132(26.6)	148(31.1)	df = 2
≥60	100(20.2)	46(9.7)	**p = 0.001**
			z = 5.051
Mean Age of Household Head (in years)	42.4 ± 16.8	38.5 ± 13.7	**p < 0.001**
Gender of Household Head			$\chi 2$ = 3.399
Male	155(31.2)	166(34.9)	df = 1
Female	341(68.8)	309(65.1)	p = 0.065
Religion of Household Head			
Christianity	428(86.3)	412(86.7)	$\chi 2$= 2.867
Islam	58(11.7)	57(12.0)	df = 2
Others*	10(2.0)	6(1.3)	p = 0.239
Education of Household Head			
No Formal Education	73(14.7)	62(13.1)	
Primary	95(19.2)	42(8.8)	$\chi 2$= 3.616
Secondary	252(50.8)	214(45.1)	df = 3
Tertiary	76(15.3)	157(33.0)	p = 0.460
Occupation of Household Head			$\chi 2=15.060$
Informal	422(85.1)	357 (75.2)	df = 1
Formal	74(14.9)	118 (24.8)	**p < 0.001**
Marital Status of Household Head			
Single	22(4.4.)	31(6.5)	$\chi 2=22.235$
Married /Co-habiting	403(81.3)	418(88.0)	df = 2
Separated/Divorced/Widow/Widower	71(14.3)	26(5.5)	**p < 0.001**

Tribe of Household Head			
Yoruba	452(91.1)	444(93.5)	*χ2=6.277*
Ibo	16(3.2)	19(4.0)	df = 2
Others**	28(5.7)	12(2.5)	**p = 0.043**
Presence of Elderly Person in the HH			
			χ2=10.450
Yes	100(20.2)	49(10.3)	df = 1
No	396(79.8)	426(89.7)	**p = 0.001**
Presence of Children less than five years in the HH			*χ2=3.600*
Yes	182 (36.7)	181(38.1)	df = 1
No	314 (63.3)	294(61.9)	p = 0.058

χ^2 – chi-square, p- level of significance (< 0.05), df - degree of freedom, Others*includes traditional worshipper (Ifa, Ogun), Grail messengers **Others include Hausa, Igbo, Delta, Ebira, Nupe, Fulani, Igede, etc, Freq-frequency

Household heads who were aged less than 40 years were more in the urban areas (59.2%=281) than the rural areas (53.2%=264), while household heads aged ≥60 years were more in the rural areas (20.2%=100) than the urban areas (9.7%=46), (p=0.001). The mean age was higher in rural areas (42.4±16.8) than in urban areas (38.5±13.7). Majority of the household heads were females in both rural (68.8%=341) and urban areas (65.1%=309) respectively. The female-male sex ratio of the household head is 2:1(similar in both rural and urban areas). The predominant religion was Christianity in both rural (86.3%=428) and urban areas (86.7%=412), respectively.

About half of the household heads in both the rural (50.8%=252) areas and urban (45.1%=214) areas had secondary education. Majority of the household heads work in the informal sector (both rural (85.1%) and urban (75.2%)), while more people work in the formal sector (24.8%) in the urban areas than the rural area (14.9%),(p<0.001). Majority of the rural (81.3%=403) and urban (88.0%=418) household heads were married, and about 14.3% (71) of the rural HH heads were widowers/widow/divorcee compared to 5.5% (26) in the urban counterparts, (p<0.001). In addition, the most predominant tribe was Yoruba (in both rural (91.1%=425) and urban areas (93.5%=444) respectively. The rural household heads (20.2%=100) had more elderly person above 65years of age than the urban areas (10.3%=49) (p<0.001). On the other, both the rural (36.7%=182) and urban HHs (38.1=181) had similar number of children under-five years of age.

Table 3.2: Socio-economic characteristics of the household heads in the rural and urban communities of Ekiti State, Nigeria

Socio-demographic variables	**Location**		**Statistical indices**
	Rural n = 496 Freq. (%)	**Urban n = 475 Freq. (%)**	
Wealth Status of Household			
Poorest	200(40.3)	37(7.8)	*χ2=200.120*
Poor	82(16.5)	99(20.8)	df = 4
Average	72(14.5)	130(27.4)	**p < 0.001**
Rich	85(17.2)	41(8.6)	
Richest	57(11.5)	168(35.4)	
Household Income(naira)			
≤20,000	236(47.6)	165(34.7)	*χ2=25.780*
>20,000 – 50,000	200(40.3)	203(42.7)	df = 3
>50,000 – 150,000	58(11.7)	101(21.3)	**p < 0.001**
≥150,000	2(0.4)	6(1.3)	
Median income	20,000	37,976	z = 5.451 **p < 0.001**

χ^2 – chi-square, p- level of significance (< 0.05), df - degree of freedom.

This study revealed that two-fifths of the rural households (40.3%=200) were among the poorest wealth quintile compared to their urban counterpart (7.8%=37). Similarly, about one-third of the urban HHs (35.4%=168) were among the richest wealth quintile compared to their rural counterpart (11.5%=57), ($p<0.001$). In this study the median HH income in the urban areas is 37,976Naira (124.1USD) (One USD=306naira at 2018)) [128] with a range of 398,000 Naira (1300.7USD) where the income lie between 2000-400,000naira (6.5-1307.2USD), in rural areas median HH income 20,000Naira (65.4USD) with a range of 199,500 Naira (652USD) where the income lie between 500-200,000Naira (1.6-653.6USD), ($p<0.001$).

Table 3.3: Total household spending and health spending of the household heads in the rural and urban communities of Ekiti State, Nigeria

Variable	**Location**		**Statistical indices**
	Rural n = 496 Freq. (%)	**Urban n = 475 Freq. (%)**	
Total Household spending(naira)			
<50 000	336(67.7)	214(45.1)	$\chi 2$= 62.521
50 000-100 000	111(22.4)	219(46.1)	df = 1
>100 000	49(9.9)	42(8.8)	**p < 0.000**
Median household spending	34925	52500	z = 6.545 **p < 0.001**
Household Health spending(naira)			
<5 000	424(89.3)	439(88.5)	$\chi 2$= 1.7639
>5 000- <10 000	24(5.0)	29(5.9)	df = 1
>10 000-<15 000	13(2.7)	9(1.8)	p < 0.623
>15 000	14(3.0)	19(3.8)	
Mean household health spending	2572±18848	3551±12978	z = 2.865 p =0.229

The median household spending is higher in the urban area (52,500naira; 172USD) than the rural areas (34,925naira; 114USD) (One USD=306naira at 2018)). [128] The total household spending of two-third of the rural household is less than 50,000naira (163USD) monthly while about half of the urban household spends between 50000-100000naira monthly (163-327USD). The range of total household spending for the rural household is 253,000 naira (827 USD) (1,000naira-254,000naira:3.3-830.1USD) while for the urban household it is 1,037,500 naira; 3390 USD (7,200 naira -1044700 naira; 24-3,414 USD).

The mean household health spending is higher in the rural area (3,550naira; 11.6USD) than the urban areas (2,572naira; 8.4USD). The household health spending of majority of the rural and urban household is less than 5000naira (16.3USD) monthly. The range of the household health spending for the rural household is 131,000 naira; 428USD (0-131,000naira:0-428USD) while for the urban household it is 397200 naira; 1298USD (0-397200 naira; 0-1298USD).

Table 3.4: Prevalence of household catastrophic health expenditure within rural and urban communities of Ekiti State, Nigeria

Catastrophic Health Expenditure	**Location**		**Statistical indices**
	Rural n = 496 Freq. (%)	**Urban n = 475 Freq. (%)**	
Based on Household Total Expenditure			
At 10% Threshold (HCHE1)			χ^2= 5.952
Yes	92(18.5)	61(12.8)	df = 1
No	404(81.5)	414(87.2)	**p = 0.015**
Based on non-subsistence income			
At 40% Threshold (HCHE2)			
Yes	41(8.3)	12(2.5)	χ^2= 15.491
No	455(91.7)	463(97.5)	df = 1
			p < 0.001

The prevalence $HCHE_1$ was higher in the rural areas 18.5% (92) than the urban areas 12.8% (61), (p=0.015). The prevalence of $HCHE_2$ (based on the definition that any household spending more than or equal 40% of their non-food expenditure of income) was also higher in the rural areas 8.3% (41) compared to the urban areas 2.5% (12) which was statistically significant (p<0.001). It is worthy of note that the two methodological calculations of HCHE gave different results.

Table 3.5: Sensitivity Analysis at various thresholds of the prevalence of household catastrophic health expenditure within rural and urban communities, Ekiti State

Catastrophic Health Expenditure	**Location**	
	Rural n = 496 Freq. (%)	**Urban n = 475 Freq. (%)**
Based on Household Total Expenditure($HCHE_1$)		
At 5% Threshold	138(27.8)	81(17.1)
At 10% Threshold	92(18.5)	61(12.8)
At 20% Threshold	55(11.1)	23(4.8)
Based on non-subsistence expenditure of income($HCHE_2$)		
At 20% Threshold	90(18.1)	37(7.8)
At 30% Threshold	65(13.1)	21(4.4)
At 40% Threshold	41(8.3)	12(2.5)
At 50% Threshold	35(7.1)	8(1.7)

The prevalence of $HCHE_1$ has a higher range of value in the rural areas (11.1% to 27.8%) than the urban areas (4.8% to 17.1%). Similarly the prevalence of $HCHE_2$ has a higher range of value in the rural areas (7.1% to 18.1%) than the urban areas (1.7% to 7.8%). The sensitivity analysis of $HCHE_1$ showed that with an increasing trend in the thresholds there is a corresponding decrease in the prevalence of $HCHE_1$ (at 5%,10% and 20% threshold, it shows a corresponding prevalence of 22.6%, 15.8% and 8.0% respectively). Equally the sensitivity analysis of the prevalence of $HCHE_2$ also shows similar trends (at 20%, 30%, 40%, 50% threshold, it shows a corresponding prevalence of 13.1%, 8.9%, 5.5% and 4.4% respectively).

4. DISCUSSION

This study found that the prevalence of household catastrophic health expenditure (for the different methodological definition) in the rural and urban community in Ekiti State was also within the range of that reported in a systematic review done in a cross-country analysis among different household survey(Xu et al, 2003, Knaul et al, 2011 and Brinda et al, 2014). This study demonstrated the fact that the rural prevalence of household catastrophic health expenditure was higher than the urban prevalence (for the two methodological calculation of HCHE). The prevalence of $HCHE_1$ was significantly higher in the rural areas, 18.5% than in urban areas, 12.8% (p=0.015). This may be explained by the higher presence of the elderly in the rural area, who may have had chronic health conditions necessitating an increase in healthcare cost. Also rural dwellers may have a higher HH size and reduce HH income or higher poverty rate. Furthermore, the presence of HCHE is highest among the rural household spending less than 50 000naira monthly and among urban household spending between 50 000 (163USD)-100 000naira (327USD)monthly; hence any little health shocks in the household can lead to catastrophic spending in the rural poor.

The urban prevalence in this study is similar to a study by Saito et al, (Saito, Gilmour, Rahman, Gankin, Shrestha, Shibuya, 2014) who reported prevalence $HCHE_1$ in urban part of Nepal of 13.8%. Also a similar study by Onoka et al (Onoka et al, 2010) revealed $HCHE_2$ prevalence of 15%. Another urban study in Ekiti state by Olatunya et al (Olatunya et al, 2015) revealed the prevalence of $HCHE_1$ was 20.7%. It was higher than that of this present study because the present study is a population-based study while Olatunya et al (Olatunya et al, 2015) study was a hospital-based study directed at sickle cell disease patients and their households. Also, a sharp contrast was noticed in the study by Ukwaja et al (Ukwaja et al, 2013) who observed a higher proportion and higher magnitude of HHs with $HCHE_1$ in the urban resident compared to the rural resident (OR=3.8, 95%CL (1.9-7.7)). This difference may have occurred because the study (Ukwaja et al, 2013) populations were household members that had tuberculosis (which occur more in overcrowded urban areas), and it is a hospital-based study compared to this present study which is population-based.

In this present study, the prevalence of $HCHE_2$ was higher in the rural areas (8.3%) than the urban areas (2.5%), which was statistically significant at $p<0.001$. The urban prevalence result is similar to the study by Ilesanmi (Ilesanmi et al, 2014) whose prevalence of $HCHE_2$ was 6.6% in the urban areas of Oyo State, Southwest of Nigeria. The similarity may have occurred because the two studies took place among similar demographics in the Southwestern part of Nigeria. Similarly, in another study (Onwujekwe et al, 2012) in eastern Nigeria by Onwujekwe, rural prevalence is higher (39%) compared to its urban prevalence (15%), though it shows similarity in the pattern of the prevalence but the magnitude is higher possibly because it is a health facility-based study. The difference in the prevalence between Onwujekwe (Onwujekwe et al, 2012) and this study may be attributed to the older age group of the respondent in Onwujekwe's study, (Onwujekwe et al, 2012) who in this case, are more likely to be prone to more chronic disease which increases the healthcare utilization, healthcare cost, risk of hospitalization and or hospital admission. Equally, in another study by Onwujekwe, (Onwujekwe et al, 2011) a higher prevalence rate may have occurred because Onwujekwe's study(Onwujekwe et al, 2011) was a hospital-based study where more ill individuals are more likely to have sought healthcare service and pay for healthcare directly and indirectly compared to the present study. A study (Puteh and Almualm, 2012) in India showed a higher prevalence in the rural areas (25.3%) than urban areas (17.5%). This Indian study has a similar pattern but a higher magnitude than our study.

The sensitivity analysis of $HCHE_1$ showed that an increase in the threshold leads to a corresponding decrease in the prevalence of $HCHE_1$. Similarly Buigut et al (Buigut et al, 2015) study revealed that an increase in the threshold (5%, 10%, 15%, 20%, and 30%) will have a corresponding decrease in prevalence of $HCHE_1$ (28.4%, 22.8%, 20.8%, 19.7%, and 8.5%). Also this study revealed that prevalence of $HCHE_2$ at an increasing threshold also leads to a corresponding decrease in prevalence of HCHE. This is equally similar to a study by Buigut et al (Buigut et al, 2015) that at increasing threshold (10%, 15%, 20%, 30%) there was noticed a corresponding decrease in the prevalence of HCHE2 (6.1%, 4.1%, 2.7%, 1.6%).

The findings of high prevalence of HCHE as highlighted in this study have some public health significance and policy implication. This indicate the need for a reduction in OOPs (from 70% to less than 30%) and an increase

in prepayment method of healthcare financing (from 5% to >70% coverage) (Hsiao, 2015, World Bank, 2016 and Boerma, Eozenou, Evans D, Evans T, Kieny, Wagstaff, 2014.). Hence the urgent need for further studies to find the different factors responsible for the high prevalence of HCHE in both rural and urban areas, particularly in the rural areas.

5. CONCLUSION

The study concluded that the prevalence (based on HE >10% of the total expenditure of income) of $HCHE_1$ was higher in the rural areas than urban areas of Ekiti state, Nigeria. Similarly, the prevalence of $HCHE_2$ (based on HE ≥40% of the non-subsistence of income) was higher in the rural areas than the urban areas of Ekiti state, Nigeria. The sensitivity analysis of $HCHE_1$ and $HCHE_2$ also revealed that an increase in the threshold leads to a corresponding decrease in the prevalence of HCHE (for both definitions).

The high prevalence of HCHE (which is higher in the rural areas) is indicative of little or no prepayment scheme of the health system, hence it is recommended that government at all level should adopt and increase the coverage of healthcare insurance, especially to the rural communities where the prevalence of HCHE is higher.

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Assessment of Household Work as Compensation for Physical Activity Deficit Amongst Older Adults in a Nigerian Urban Setting

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Abstract
Urban older adults tend to be physically inactive and often remain indoors. Household work of a sample of 300 urban-dwelling adults (50-65 years) from a Nigerian state capital was therefore investigated for physical activity (PA) levels. Questionnaire on participation in household tasks, time and days/week for the tasks, awareness of health benefits of PA and household work as exercise was used. Greater participation occurred in household chores than outdoor/yard work (70.0 vs 44.0%) while participation varied with specific chores (55.0-70.0%) and yard work (28.7-34.0%). Gender, education, age and living with spouse or children/helper were associated with performance of household chores ($P<0.05$) as well as with yard work except living with spouse. Prevalence of low-intensity household PA was high with only 0.9-13.8% attaining moderate-intensity level and no vigorous-intensity. Low prevalence of awareness of PA health benefits (32.3%) and household work as exercise (14.4%) was observed, but were related to good performance of household work (OR, 1.50-1.55; CL, 0.55-3.54). The finding that 13% of the respondents attained moderate-intensity PA indicated the potential of household work to compensate for the absence of other physical activities. Thus public health campaigns based on household work as exercise in a gender sensitive African society becomes necessary.

Keywords: Household Chores, Yard Work, Physical Activity, Older Adults, Urban Centre

1. Introduction

The advantages of physical activity (PA) especially as it concerns prevention and retardation of non-communicable diseases have been demonstrated in several reports (e.g. Kokkinos 2012; Reiner, Niermann, Jekauc & Woll, 2013; Elmagd 2016; WHO, 2018; Gesinde, 2019). Despite the well documented benefits, physical inactivity remains widespread across the world especially among older adults (WHO 2018). Non-communicable diseases are increasing in sub-Saharan African (SSA) countries and one of the risk factors is physical inactivity (Gouda et al. 2019). There are indications that the PA levels of adults and youths in low-income countries including SSA are generally below the minimum requirement (Hallal et al. (2012). With

respect to Nigeria, the prevalence of physically active individuals tends to vary from low to high (16.4-78%) depending on the setting and the population investigated (Owoeye et al. 2013; Akarolo-Anthony & Adebamowo, 2014; Ejechi & Ogege 2015; Adeniyi et al. 2016; Oyeyemi et al. 2013; 2018). Reports from other SSA countries also tend to follow a similar trend (Assah et al. 2015; John et al. 2017; Mashili et al. 2018; Mengesha et al. 2019).

While rural dwellers in SSA are physically active due to the manual physical labour associated with farming, grazing hunting and fishing (Ejechi, 2013; Assah et al. 2015; John et al. (2017; Mashili et al. 2018), the same cannot be said of many urban inhabitants especially white collar workers and shopkeepers who spend most of the time on the desk (Biswas et al., 2018; Azevedo et al., 2020). Economic factors, congestion, unplanned neighbourhoods, and insecurity tend to limit leisure and recreation PA in SSA (Juma et al. 2019; Barr et al., 2020), thereby leaving transportation and household work as potential contributors to total PA of older adults. Use of private vehicles and proximity to workplaces can limit transportation PA. Participation in household chores and yard work is open to persuasion whereas it will not be easy to persuade people to abandon their vehicles and to ride bicycle or trek to their offices or shops. Household work (chores and outdoor/yard work) can contribute to total PA levels as some studies have shown (Phongsavan 2004; Murphy er al. 2013; Nicklett et al., 2016) and provide health benefits (Fransson 2003: Shi et al. 2015; Scott et al., 2020; Park er al. 2020). This is important for older adults because physical inactivity makes them vulnerable to diseases the signs of which may begin in early old age.

There is paucity of information on the participation level of urban-dwelling older adults in household chores and yard work in Nigerian and SSA settings where traditional gender division still prevails. Information on the level of participation is essential for identifying areas for intervention in order to promote household work as beneficial to health. The study therefore focused on: (1) the prevalence and level of participation in household chores and outdoor/yard works of urban-dwelling adults in early old age; (2) the intensity of the PA arising from the household activities; and (3) the factors hindering participation in household chores and yard work.

2. Method

2.1 Data Source

Information for the study was obtained from randomly selected 300 respondents in early old age (50-65) from two cities including Asaba the capital of Delta State, Nigeria. Information sought from the respondents were participation in household chores and yard work, knowledge of the benefits of physical activity and socio-demographic characteristics (gender, age, education, marital status, children/house help and house) using structured questionnaire. The questionnaires were administered face-to-face by research assistants after obtaining verbal consents of the respondents. Pidgin English was used for interpretation when necessary.

2.2 Measures

The extent of participation in indoor household chores was determined using a list of 5 tasks which include kitchen work (cooking, washing dishes), sweeping indoor, washing clothes, ironing clothes and mopping/cleaning floor. Respondents were requested to rate their participation/performance in each of the 5 tasks on a scale of 4: (1, I do not; 2, Once in a while; 3, Most of the time; 4, All the time). The same scale was used for 3 identified tasks of yard (outdoor) works (Garden/weeding, sweeping outdoor, washing vehicle). The maximum available points for chores and yard work tasks stood at 24 and 12, respectively. The presence of features for outdoor/yard work (lawn, garden, flowers, vehicle for washing and sweeping areas ≥20x20m) was indicated by "Yes" or "No" responses. The MET-minutes/week values of the household work PA of the respondents were assessed using the IPAQ (2005) protocol. In line with this procedure, respondents were asked to estimate the time (minutes) and the number of days in a week that the household tasks were undertaken. Respondents indicated awareness or non-awareness of the health benefits of PA with a "Yes" or "No" answer to the question: "do you know that PA can prevent or reduce the effect of non-communicable diseases like diabetes, obesity and heart problems?" Respondents were also requested to answer "Yes" or "No" to the question: "do you consider household chores and yard works physical exercises?"

2.3 Data analysis

Prevalence of participation was computed from the number of respondents that perform each of the household chores and yard work. The association between the socio-demographic characteristics and the level of participation (based on performance scores) in the chores and yard work was analysed with chi square statistics. Scores ≤50% and >50% of maximum available points were adopted as "Poor" and "Good", respectively, and used for the cross-tabulation. IPAQ (2005) procedure was used for calculating MET-min/week scores where the recommended MET values for household inside chores and yard work are 3.0 and 4.0, respectively. These values were multiplied with the time (minutes) taken to perform the tasks and the number of days the tasks were performed in a week (MET x minutes x days/week). By IPAQ recommendations, scores of 600-1500 MET-min/week is considered moderate-intensity PA while below and above stood at low- and vigorous-intensity levels, respectively. These values formed the basis of calculating prevalence of respondents with low or moderate-intensity PA. The relationship between the awareness of the benefits of PA, consideration of household work as physical exercise (independent variables), and scores from performance of household tasks (dependent variables) was analysed by logistic regression. SPSS version 21 was used for the statistical analyses.

3. Results

As can be seen in Table 1, respondents living with spouse, children/helpers and living in multiple families' buildings (block of flats) were more than 60% of the sample population. Males were more than females by 12% while respondents with secondary or tertiary education were markedly greater than those with primary education (Table 1). The number of respondents decreased with increasing age (Table 1). The prevalence of participation in household indoor chores and outdoor/yard works is presented in Figure 1. Participation in indoor chores was generally high (≥55%) among the respondents with just 30% reporting non-participation. In contrast, prevalence of participation in outdoor/yard works was low (<35%) with over 60% reporting non-participation. Prevalence of outdoor features for yard work was markedly lower in multiple family buildings when compared to single family detached buildings (Figure 2). The number of houses with lawns, gardens or flowers was less than 35% with no presence of lawn in any multiple families building (Figure 2). The median and range values of the time and days

Table 1: Socio-demographic characteristics of respondents

Variables		**Respondents**	
		N=300	%
Gender	Male	168	56.0
	Female	132	44.0
Education	None/primary	58	19.3
	Secondary	125	41.7
	Tertiary	117	39.0
Age	50-55	125	41.7
	56-60	101	33.6
	60-65	74	24.7
Living with spouse	Yes	187	62.3
	No	113	37.7
Living with children/helper	Yes	207	69.0
	No	93	31.0
Type of house building	Detached[a]	105	35.0
	Block of flats[b]	195	65.0

[a]Single family building; [b]Multiple family building

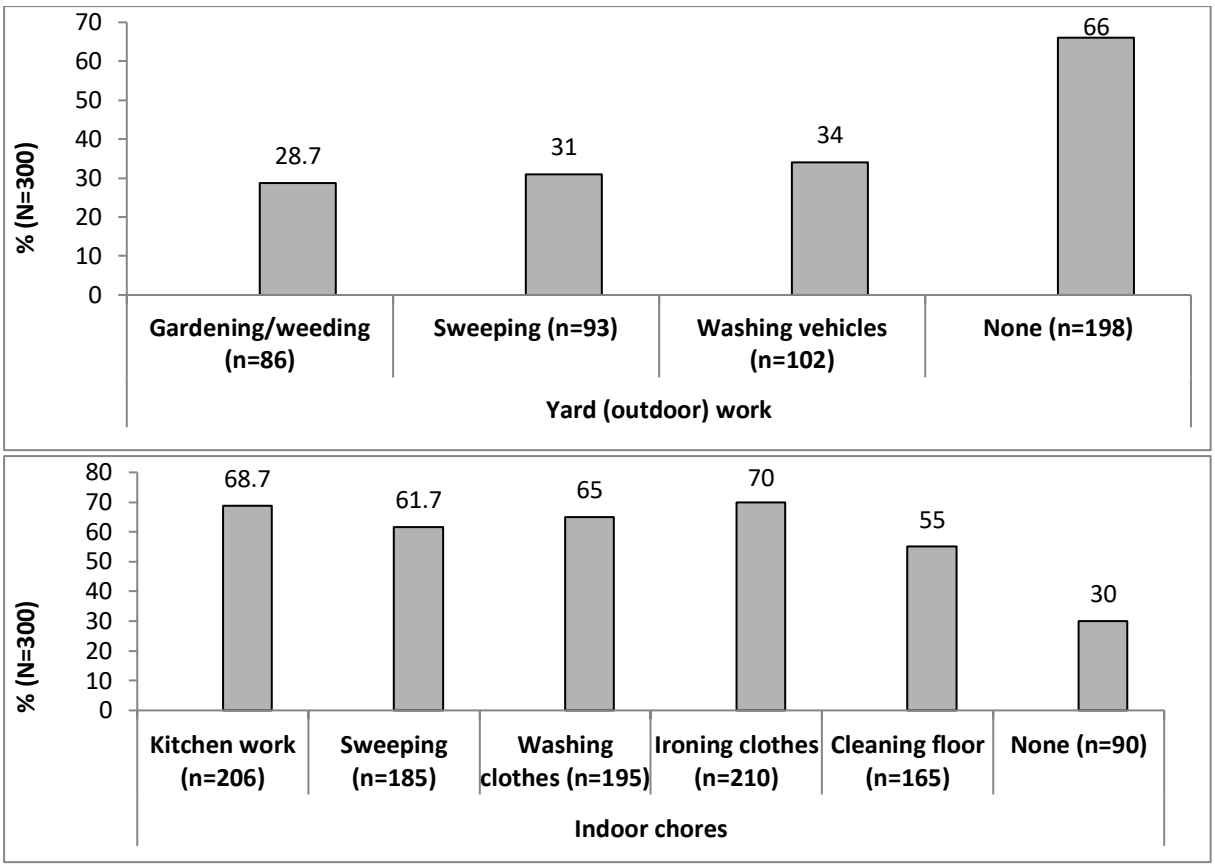

Figure 1: Prevalence of participation in household work

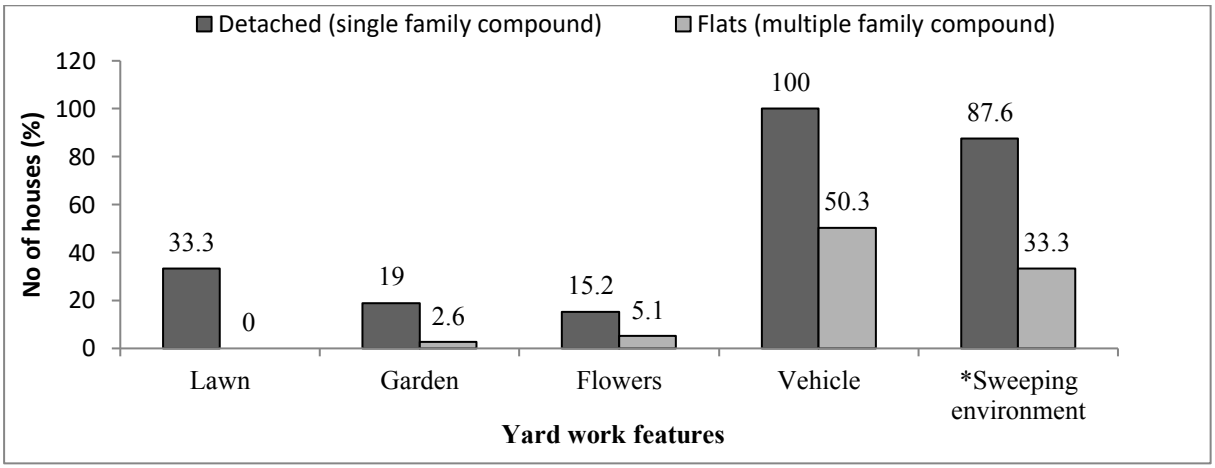

Figure 2: Availability of household outdoor features for yard work (*n*: detached building, 105; block of flats building, 195; *outdoor space ≥20 x 20m

taken to perform the household works varied with the type of chores and outdoor works (Table 2). The duration (mins/week) for performing kitchen work, washing clothes and outdoor sweeping was the highest (Table 2).

Table 2: Duration of performance of household chores and outdoor/yard works

Household work		*n*	**Duration (mins)**	**Days/week**	***Median mins/week**
			Median (range)	Median (range)	
Indoor chores	Kitchen work	206	30(15-90)	5(3-7)	150
	Sweeping	185	10(5-30)	3(1-7)	30
	Washing clothes	195	45(30-90)	2(1-3)	90
	Ironing clothes	210	30(10-60)	2(1-3)	60
	Cleaning floor	165	15(10-60)	2(1-3)	30
	No participation	90	0	0	0
	Gardening/weeding	86	45(30-90)	1(1-2)	45
	Sweeping	93	30(10-60)	3(1-5)	90
Outdoor work	Washing vehicles	102	15(10-30)	3(1-7)	45
	No participation	198	0	0	0
	Total	NA	NA	NA	**540**

*Calculation was based on median values of minutes and days/week. NA, Not applicable

Prevalence of poor and good performance of household chores was nearly even by overall assessment (Table 3). In contrast, prevalence of poor performance of yard works was nearly 60% also by overall assessment (Table 3). All background characteristics except types of house were significantly associated with performance of inside chores (Table 3). Respondents living without spouse or children/helpers, with lower education, of younger age and females were more prevalent in the good chores performance category (Table 3). A similar trend was observed with yard work except, gender and presence/absence of spouse that were not associated with performance score (Table 3).

Table 3: Chi square analysis of the association between socio-demographic characteristics and level of participation in household work

Background characteristics		**[a]Participation/Performance score**					
		Indoor chores [*n*(%)]			Outdoor/yard work [*n*(%)]		
		Poor	Good	X^2	Poor	Good	X^2
Gender	Male	132(78.6)	36 (21.4)	10.63*	100(59.5)	68(40.5)	1.26
	Female	81(61.4)	51(38.6)		70(53.0)	62(46.9)	
Education	None/primary	13(22.4)	45(77.6)	188.85**	10(17.2)	48(82.7)	183.79**
	Secondary	48(38.4)	77(61.6)		60(48.0)	65(52.0)	
	Tertiary	57(48.7)	60(51.3)		70(59.8)	47(40.2)	
Age	50-55	53(42.4)	72(57.6)	154.53**	75(60.0)	50(40.0)	183.79**
	56-60	39(38.6)	62(61.2(		75(74.2)	26(25.7)	
	60-65	54(72.9)	20(27.0)		60(81.1)	14(18.9)	
With spouse	Yes	90(48.1)	97(51.9)	11.45*	107(57.2)	80(42.8)	3.80
	No	32(28.3)	81(71.7)		51(45.1)	62(54.9)	
With children/ helper	Yes	133(64.3)	74(35.7)	24.75**	135(65.7)	72(34.8)	18.39**
	No	31(33.3)	62(66.7)		36(38.7)	57(61.3)	
Type of house	Detached	71(67.6)	34(32.4)	3.27	63(60.0)	42(40.0)	3.23
Building	Block of flats	111(56.9)	84(43.1)		137(70.3)	58(29.7)	
All respondents		152(50.6)	148(49.3)		171(57.0)	129(43.0)	

[a]Performance score: Poor= ≤50% max points; Good>50% max points. Max available points: indoor chores, 24; outdoor/yard, 12 (See Method). Significance: *P<0.01; **P<0.001

The results in Table 4 show that on the average, less than 10% of the respondents with background characteristics-based variation range of 0.9-13.8% met the recommended MET-min/week value for moderate-intensity PA level. Vigorous-intensity PA level was not attained. The table further shows that respondents

having tertiary education were the least (<1.0%) that met the moderate-intensity level while those living without children/helpers, having none or primary education and living in detached (single family houses) were greater.

Table 4: Prevalence of respondents in MET-min/week values arising from inside and yard household work

Background characteristics		***n***	**Prevalence (%) of respondents with:**	
			Low PA (<600 MET-min/week)	Moderate-intensive PA (≥600 MET-min/week)
Gender	Male	168	94.0	6.0
	Female	132	91.7	8.3
Education	None/primary	58	86.2	13.8
	Secondary	125	90.4	9.6
	Tertiary	117	99.1	0.9
Age	50-55	125	90.4	9.6
	56-60	101	93.1	6.9
	60-65	74	97.3	2.7
With spouse	Yes	187	94.7	5.3
	No	113	90.3	9.7
With children/helper	Yes	207	95.7	4.3
Type of house	No	93	87.1	12.9
	Detached	105	86.7	13.3
All respondents	Block of flats	195	96.4	3.6
		300	93.0	7.0

On the average and by overall assessment, the prevalence of the awareness of the benefits of PA was generally low (<40%) except with higher education respondents which were slightly more than 50% (Table 5). A similar trend was observed with respect to considering household chores and yard works as physical exercises but on this occasion higher education respondents were lower than 50% (Table 5). Logistic regression analysis showed that knowledge of the benefits of PA and consideration of household work as physical exercises were significantly associated with good performance of household chores and yard work (Table 6).

Table 5: Prevalence of the knowledge/awareness of the health benefits of physical activity and household work as physical exercise by socio-demographic characteristics

Background characteristics		***n***	**Prevalence (%)**			
			PA as health benefit		Household chores/yard works as physical exercises	
			Yes	No	Yes	No
Gender	Male	168	41.7	58.3	9.5	90.5
	Female	132	20.4	79.6	5.3	94.7
Education	None/primary	58	8.6	91.4	10.3	89.7
	Secondary	125	23.2	76.8	12.0	88.0
	Tertiary	117	53.8	46.2	43.6	56.4
Age	50-55	125	28.8	71.2	4.0	96.0
	56-60	101	35.6	64.3	6.9	93.1
	60-65	74	33.8	66.2	21.6	78.4
All respondents		300	32.3	67.7	14.4	85.6

Table 6: Logistic regression analysis of the relationship between awareness of the health benefits of PA, household chores/yard work as physical exercise and participation in household work

Knowledge/awareness of:		Household work score	Odds Ratio	95% CL
Benefits of PA	No	Poor	1.0	
		Good	1.03	0.32-2.30
	Yes	Poor	1.0	
		Good	1.55*	0.55-3.54
Household chores/yard work as physical exercise?	No	Poor	1	
		Good	0.85	0.20-1.65
	Yes	Poor	1	
		Good	1.50*	0.60-3.45

*P<0.05

4. Discussion

The high prevalence of respondents participating in household inside chores was not unexpected because the tasks are mostly routine activities that are essential to daily living. In contrast, participation in yard work especially gardening was low and this can partly be attributed to its being undertaken for aesthetics, social or leisure-time activity (Ashton-Shaeffer & Constant, 2006) which may not be regular. This is buttressed by the finding that the time and days taken to perform indoor chores was generally markedly greater than it took for yard works. Further evidence supporting this observation comes from the scores of participation in chores and yard work where the prevalence of poor performance was markedly higher in yard work. Yard work entails substantial PA depending on the task involved. Reports have shown that PA from gardening is on the average low- to moderate-intensity although tasks involving full body movement (e.g digging and weeding) may be of vigorous-intensity (Nicklett et al. 2016**).**

A combination of chores and yard work failed to attain moderate-intensity level in over 80% of the respondents thereby indicating the need to engage more in yard work because it is more energy-consuming. This is important because reports have shown that household work PA can attain moderate intensity levels (>600 MET-mins/week) or 150 mins/week (Phongsavan et al. 2004; Murphy et al. 2013; Park et al. 2020). Some background characteristics tend to influence performance of household chores and yard work as indicated by the chi square analysis and the variations in the prevalence of low and moderate-intensity PA. The better performance of females in household works is a reflection of traditional African gender division where household work is seen to be the responsibility of women. Indeed it has been reported that household work is the largest contribution to the total PA of women whereas it is low in men (Phongsavan et al. 2004; Murphy et al., 2013). Advancing age as a limiting factor to participation in household work was not unexpected due to ageing factors and most importantly the African tradition which regards participation of elders in domestic work as unusual. It was also not unexpected that respondents living with spouse, children or helpers would perform worse because the household tasks may be fully performed by the children or helpers. Another factor that reduced the household PA is the type of building occupied by the respondents. Energy exerting outdoor task features such as gardening, maintaining lawns and flowers were almost absent in multiple family buildings because of lack of space; and even in single-family detached buildings with space, less than 40% had these features. This probably explains the finding that over 60% of the respondents did not participate in yard work.

Lower education respondents tended to perform the household works better despite the fact that they report ignorance of the health benefits of PA and household work as physical exercise. The contradiction here is that higher education respondents with a substantial population (>50%) that are aware of PA benefits and regarded household chores/yard work as PA were poor participants in household works. This suggests that they may be in good economic positions to afford the services of helpers/paid labourers and therefore consider it *infra dig* to undertake household work. Indeed less than 1.0% of them attained moderate-intensity PA level whereas those with none or primary education were nearly 14%. Although it has been reported that those having knowledge of the health benefits of PA are usually more physically active (Williamson, 2016; Fredriksson et al. 2018; Abula et al., 2018), it is not the case concerning respondents with tertiary education in this study. However, the

importance of knowing the benefits of PA was still indicated because by overall assessment a significant association between awareness of PA health benefits and good performance of household work occurred.

It is clear that household PA is severely limited amongst the urban-dwelling older adults in the Nigerian setting. As noted earlier, Nigerian urban settings with its insecurity, congestion and poor neighbourhood layout restricts leisure and recreational PA. The only other source of PA is transportation and the fact that overwhelming majority of the respondents (especially those living in single family buildings) possess vehicles can also limit the PA arising from trekking or cycling. The implication is that older adults are most likely to face ill-health risks associated with insufficient PA. However increased participation in household chores and yard work can fill the PA gap left by other low PA levels as was observed by Stephan et al. (2016). These findings and the implications need to be brought to the attention of the community in order to increase participation in household chores and yard work. The key areas emerging from this study for PA promotional intervention by public health agencies are gender division, awareness of PA health benefits, acknowledgement of household work as physical exercise and housing environment. Promotion of "green environment" by ensuring that housing building plans provide adequate space for gardens or lawns will go a long way in enhancing household PA. The finding that some older adults' PA reached the recommended levels (moderate-intensity/150-300 mins/week exercise) indicated that sufficient PA is available in household chores and yard work to meet WHO recommendations.

5. Conclusion

The results indicated that prevalence of participation in household chores and outdoor/yard work was generally low with a corresponding predominantly low-intensity PA. However, the observation that 0.9-13.8% of them attained moderate-intensity PA level with the household work, suggests that household work alone can be sufficient to attain recommended PA levels if fully performed. The report by Stephan et al. (2016) that household work can compensate for PA deficits is therefore substantiated in this Nigerian setting. However the limiting factors that require attention or intervention are gender division, awareness of PA health benefits, acknowledgement of household work as physical exercise and housing environment; and these can be addressed in health promotional campaigns by public health agencies.

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Patients Characteristics as Determinants of Patient Satisfaction: Modelling Satisfaction in a Transitional Economy

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Abstract
Introduction: This paper examines the factors and approaches the question of patients' satisfaction in the health care delivery system in North Macedonia. Aim: The study aims to assess how key service quality dimensions relate to an important measure of performance patient satisfaction and to find the elements that are valued by patients and the reasons behind patient satisfaction or dissatisfaction. Materials and method: In this research study, the factor analysis was used to group 12 questions measuring patient satisfaction under certain extent with Promax oblique rotation using the satisfaction responses gauged by importance. We have performed a structural equation model (SEM) to determine the relationships between one or more independent variables (IVs). Results: All component measures were greater than .702 which shows strong internal reliability among components. The reliability levels for the three components were .842 for the hospital environment, .835 for admin and .702 for interaction with health care professionals. Cronbach's Alpha test of the whole instrument was .903. Conclusions: The explanatory factor analysis (EFA) analysis identified three distinct components or factors of patient satisfaction: (i) hospital environment, (ii) medical administration and (iii) interactions with professionals or staff behaviour. These three factors obtained after exploratory factor analysis have a significant impact on patient satisfaction. This path estimates for our model provide insights into relationships among various constructs.

Keywords: Patients' Satisfaction, Service Quality, Care Delivery System, North Macedonia

1. Introduction

Patient satisfaction is considered as a subset of the customer satisfaction concept (Chakraborty, 2011). With global competition, health care became one of the fastest-growing sectors in the provision of health care services (Andaleeb, 2001). During the times this sector has improved tremendously in each segment. As a result, the competition among hospitals in delivering the best services is high which persuades the patients to choose the best option. For these reasons patients' perceptions of using health care services are an important part of the assessment of the quality of delivered services or care.

The research on patients' perceptions, their expectations about health care services satisfaction has been prevalent in the last decade especially among healthcare providers and purchasers of healthcare because patients or the consumers are increasingly becoming better educated about healthcare (Messner et all., 2005). Their expectations about the health services provided change as well. Various instruments to gauge the service quality in health care institutions on each level have been applied based on the cross-cultural context. For instance, the methodological issue in regards to definition, reliability, validity, factors pertained to satisfaction have been extensively used in numerous studies (Yi, 1990). However, the concentration is devoted to healthcare quality, empirical research on assessing an overall model is limited (Zineldin, 2006) and there is a lack of studies that examine and test comprehensive models for capturing causality between various constructs in patients satisfaction (Badri et al., 2008). This shows that health care is a very complex system consisted of interacting elements which are in the process of constant interruptions (Runcinam et al. l, 2007).

In previous decades, healthcare services are one of the rare topics in the studies in developing countries like North Macedonia. While it has received extensive academic attention, the need for improvement in healthcare services has grown, which challenges the health care service provider (medical and health administration staff). In general, the research indicated that there are two forms of service providers that are working in developing countries in both the private and public sector hospitals. Selecting the right health care centre and skilled physician is imperative to fulfill the aim of patient satisfaction as it suggestively influences the treatment of the patient (Shabbir, 2016). The public sector hospitals work under government policies because the received funds from the State, while the private sector organizations are established as business organizations that could provide more effective care and services to their clients.

Still, the quality problems in health care are evident in Balkan countries (Macedonia, Serbia and Bulgaria), the government investments and loans by the World Bank to health care like in Macedonia counts more than 20 mil USD since 1992 (Lazarevik and Kasapinov, 2015). Besides, private health care has also been encouraged since 2005, leading to the establishment of several private hospitals and primary health care organizations in the country.

Unfortunately, the quality of public health care services in North Macedonia has been often severely criticized and the patient's opinion gets very little attention if any. The latest webmail survey on 3 countries (Macedonia, Bulgaria and Serbia) by Lazarevik and Kasapinov (2015), showed that top three indicators of patients' satisfaction are trust and overall satisfaction with the attention of the doctors, as well as satisfaction with the outcome of the treatment. Long waiting time and huge administrative procedures are determined as a common predictor for lower patients' satisfaction across these Balkan countries. Patients' privacy protection is an issue for concern in all three countries.

2. Theoretical underpinnings

The literature has identified five key theories about patient satisfaction in health care studies. These theories conceptualized in two models using either an expectancy-value model or a congruency model (Fox & Storms, 1981; Strasser, Aharony, &Greenberger, 1993; Copeland &Scholle, 2001).

First theoretical attempt toward patient satisfaction research was embarked by Linder-Pelz (1982). In the work by Linder-Pelz, it is argued that satisfaction is mediated by patients' beliefs, experiences and values and their expectations of the health care performance. For this model, a second important finding is that patient's social network, friends or a family member have an effect on expectations about satisfaction. However, her definition of patient satisfaction originated from Ajzen and Fishbein's (1991) Theory of reasoned action (TRA) and from job satisfaction research, where an attitude is general evaluation or feeling of something such an object being positively evaluated. In the same year, Linder-Pelz has tested the Fishbein and Ajzen's theory that attitudes are constructed by the interaction of beliefs (expectations) and values regarding patient (attitude) satisfaction (expectations). Linder-Pelz found no correlation between general satisfaction factor and expectations value ratings. Consequently, many researchers have supported the Lindes-Pelz model definition in satisfaction, whereas few scholars used it as a theoretical base for building next testing instruments, which were mostly,

focused on the measurement of values of patients, not their expectations/satisfaction. Next remarkable shift in the theoretical foundation was noticed in consumer research. They are linked with theories of quality assurance and control applied in good controls sector in the 1980s (Parasurman et al. 1985). The quality approach was applied in the health sector (e.g. Babakus and Mangod, 1992; Kerssens and van Yperen, 1996) and this approach considered the measurement of patient perspectives as a method of an ongoing quality improvement instead of paying any attention to the research object itself stated by Ovretveit (1992).

The research in patient satisfaction showed that the model elaborated by Fox and Storms (1981) about socio-demographic variables is with contradictory findings, proposed model to test the social identity theory. This model is described as a congruency, which is focused on the first instance on discrepancies that are occurred, which might help in explaining which practice arrangements best satisfy particular subgroups. Fox and Storms used two sets of variables like orientation towards care and conditions of care. The orientation of care means what people want and what people expect from the health care encounter as people have different perceptions and beliefs about diseases and how they respond to illness. Whereas, conditions of care include various factors of care (i.e., metaphysics, chiropractic, allopathic, etc.), the situation of care (cost, speed, location) and the end outcomes of care. For instance, if orientations and conditions are congruent, people are satisfied, if not, they are not satisfied. The exploratory study by Fox and Storms concluded that age and sex as variables are the strongest variables as predictors in health care satisfaction.

The next theory of the expectancy-value model of Ware et al. (1983) advocates that patient satisfaction levels are determined by patients' personal preferences and expectation as far as health care is concerned. Together with other scholars, Ware developed a paradigm for monitoring the results of medical care named a Medical Outcome Study consisted of 3 parts: 1. Structural characteristics of medical care, such as system, provider and patients characteristics; 2. Process of care, which are included variables related to technical and interpersonal forms; and outcome variables, such as clinical endpoints, functional status, well-being, and care satisfaction. MOS evaluations are concentrated on outcome measures of disease-specific clinical results usually measured by the clinicians, then, generic measures of functional status, well-being and satisfaction from patients' perspectives.

Manifold models theory of Fitzpatrick and Hopkins (1983) argued that patients' expectations in health care are influenced by their social environment, primarily, which later could have a personal reflection on their satisfaction about health care services. The view of satisfaction as an attitude has been evident and supported within health care more often occurs in younger age groups or among middle-class respondents. The empirical studies are run in neurological outpatient settings and still, their models provide only partial and not very clear insights about patient's satisfaction. However, this model enables more sensitive assessment of health care from the patient's perspective.

To understand patient satisfaction many scholars used Donabedian (1980) theory, model. This theory is characterized by its multiple models comprised by structure, process and outcomes (SPO). In this trilogy, the interpersonal aspect of care has a key role in the expression of satisfaction or dissatisfaction by the patients. A patient to be satisfied in every sense within health care delivery he/she should have a positive judgment about the quality of care delivered especially as it is related to an interpersonal part of health care. Accepting the Donabedian quality assurance model Donabedian(1980,1988) still important segments of care in any health care context can be classified if they are linked with the structure (facilities, personnel), process (technical process, interpersonal process) or outcome process (somatic, psychosocial, and financial) of care. Apart from all these dimensions the overall measure of satisfaction is usually exploited from patient and consumer research studies mostly using Likert Scale questions. The relationships between structure, process and outcome are linear. Later, Donabedian(2005) explains that the structure influences the process of care so that its quality is diminished or enhanced, and both, in turn, influence the effectiveness of care on patient health status and functioning.

Structure ⟶ Process ⟶ Outcome

Structure describes the environment in which care is delivered, including hospital buildings, staff, financing, equipment, and human resources, as well as organizational characteristics such as staff training and payment methods. These factors control how service providers and clients in healthcare service delivery act and measures

of the average quality of care within a facility or system. The structure of an institution is often easy to observe and measure and it may be the upstream cause of problems identified in the process.

Process refers to the transactions between clients and service providers throughout the delivery of healthcare. These transactions most often include diagnosis, treatment, preventive care and patient education but may be expanded to include actions taken by the clients or their families. According to Donabedian, the measuring process is nearly equivalent to the measurement of quality of care because the process contains all acts of service delivery. Information about the process can be obtained from medical records, interview with clients and service providers, or direct observations of healthcare visits.

Outcome refers to the effects of healthcare on the health status of clients and population. These include the changes to health status, behaviour of both service providers and clients, or knowledge as well as client satisfaction health-related quality of life. Most times outcomes are seen as the most important indicators of quality because improving clients' health status is the primary goal of healthcare. However, having to accurately measure outcomes that can be attributed exclusively to healthcare is difficult. Drawing connections between process and outcomes often require large sample populations, adjustment by case mix, and long-term follow-ups as outcomes may take considerable time to become observable.

Lastly, in the last decade, the Primary Provider Theory was elaborated by Aragon et al. (2006), which states similarly that patient satisfaction interacts between the primary provider and patient expectations, and further this primary provider directly influences on the patient satisfaction outcome. Additionally, Aragon claims that it is operationalized by patients' measures, where only patients can judge the quality of service and all other judgments are immaterial. According to the theory, it reflects the provider's desire to communicate with and inform the patient about the whole process, in favour of encouraging their participation in the decision-making process.

To gain a deeper understanding of the patient's satisfaction in North Macedonia, we conducted a cross-sectional survey in nature and map perceptions of Macedonian healthcare customers regarding the quality of experience offered by private and state healthcare institutions in whole country. The main interest was to understand the overall patient satisfaction in health care services and is considered as an outcome from the received service as an indicator of quality. To address research objectives, the research model outlines 5 quality dimensions: tangibility, responsiveness, empathy, assurance and reliability and investigates how each of those characteristics affects patient satisfaction.

The study involved not only seeing whether these factors measure satisfaction from medical services but also showing the importance of non-medical services in shaping satisfaction, through utilising Donabedian Model. This model proposes additional variables and offers a deeper understanding of patients experiences with health care professionals which has a strong impact on patient satisfaction. As the study by Badri et al., (2009) suggests that exploratory factor analysis implies correlated dimensions, while previous research reveals several interrelationships between healthcare quality and patient satisfaction.

2.1. Conceptual research model

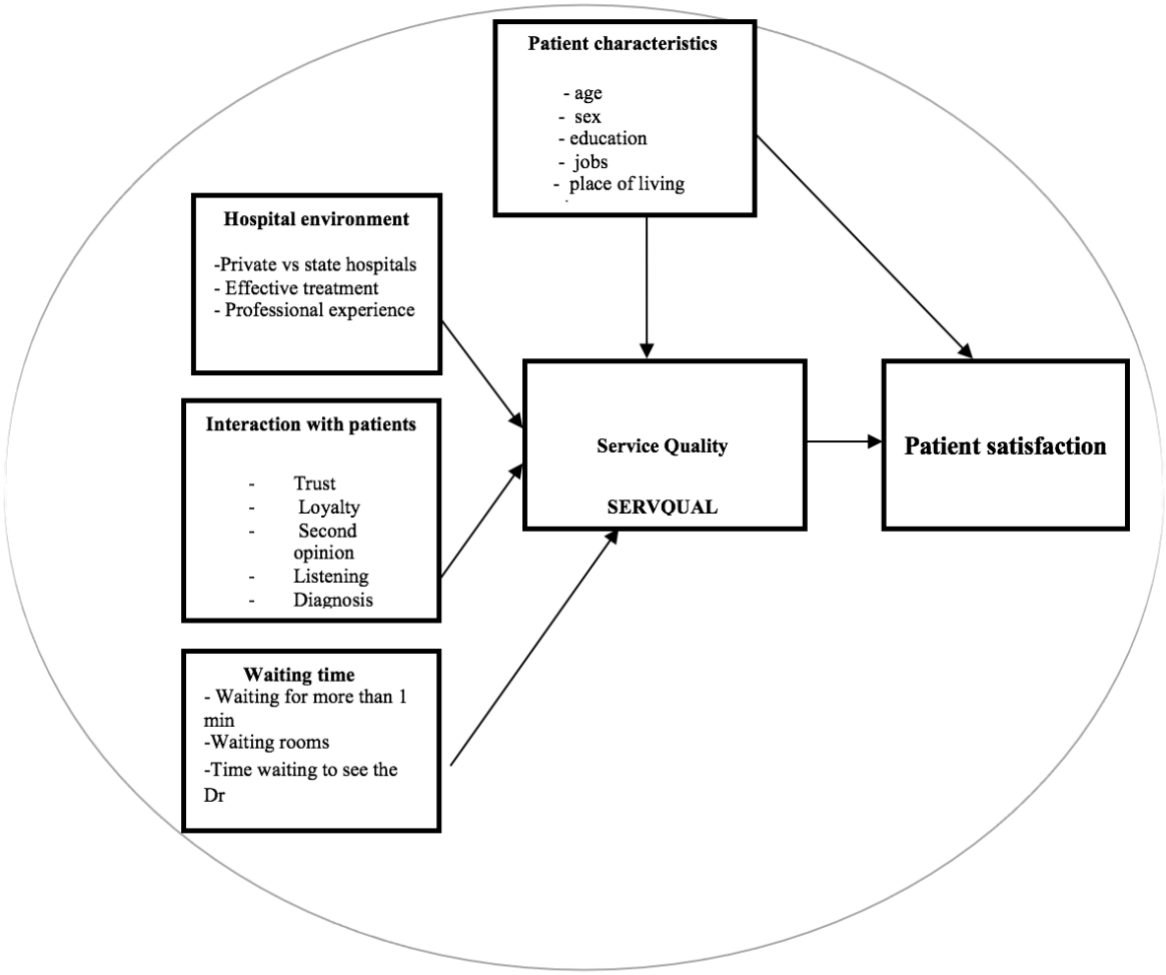

Figure 1: Research model

3. Literature review

3.1. Patient characteristics (Socio-demographic factors)

Patient characteristics that have been consistently identified as important influences on patient satisfaction and more often studied including age, education, gender, jobs, place of living, insurance, and prior experiences with the healthcare system. There is a plethora of studies indicating that have utilized the patients characteristics as control variables which are associated with patient satisfaction (Mummalaneni and Gopalakrishna, 1996; Gordo,2006; Chisick, 1997; Lewis, 1994; Tucker, 2002) and very difficult to understand and interpret later (Hall et al. l, 1990). Gordo (2006) examined data from the German Socio-Economic Panel, which revealed in his study that there is a strong association between long-term unemployment and patient satisfaction, while a weak association is documented for the short-term unemployment and patient satisfaction depending on the gender. It is worth noting that handful studies have related the variables like age, education, utilization and health with patients satisfaction (Mummalaneni and Gopalakrishna, 1996; Gordo,2006; Chisick, 1997; Lewis, 1994; Hall and Press 1996; Butler et al., 1996). Butler et al. (1996) revealed that gender and age significantly are related to patients' quality perceptions, but only to health care facilities. Females valued this dimension more than males. Whereas, the perceived facility-related quality was found to be better for older than younger respondents (Butler et al., 1996). Earlier studies showed satisfaction differences between health service users and observers (Strasser et al., 1995). However, Tucker (2002) states that unclear, contradictory relationships exist between satisfaction and gender, race, marital status and social class.

3.2. Service quality variables

3.3. Health care treatment

Treatment in health care is a construct of patient satisfaction consisted of problems in health care treatment, where are mostly used health care services – private or state health care centres, what are major problems, effective treatment and professional experience.

Hospital environment includes private and state hospitals access to services. This part of the construct is relevant and it is linked that patients report satisfaction in private hospitals, reasons for choosing private rather than a state health care hospitals.

The health care premises in which services are delivered have been found to influence customer patients' satisfaction (Bitner, 1990, 1992; Parasuraman et al., 1985, 1988). Swan et al.'s (2003) study showed that room appearance affects patient perceptions and satisfaction. This study compared patients' evaluations of hospital rooms that ranged the quality. The study results showed that healthcare dimensions affected by room appearance are: physician skill and expertise, physician and nurse courtesy (answering questions, listening to concerns) food (overall satisfaction, receiving what was ordered, temperature); general hospital evaluations, intentions to use the hospital again and recommending the hospital to others. Silvestro (2005) examined patient perceptions in one NHS breast cancer screening unit and found that screened and diagnosed patient perceptions differed. Screened patients' ratings were slightly lower than diagnosed patients' evaluations, which reflected the diagnosed patients' increased sensitivity to service levels.

3.4. Interaction with patients-communication with professionals

Because patient satisfaction is affected by many factors within the context of the whole environment, we included interaction with patients as an integral part of the conceptual model. It includes trust, loyalty, empathy, second opinion, listening, and explanation about the diagnosis.

Patient loyalty is relevant in the health care industry too. Asnawi (cited 2019 Engiz 2007, p. 914) in the study has described the patient loyalty as "the situation that the patient continues the relationship with the hospital and recommends the services of the hospital to the potential patients." Patient's loyalty is both an attitude and a 'shopping behaviour' (Dick and Basu, 1994). The study by Naidu (2008) found nurse empathy, assurance and tangibles affected loyalty positively. Security's impact on loyalty was, however, found to be negative. Other studies show that good health care professional-patient communication reinforces confidence (Chen et al., 2008; Mehra, 2016), aids information recall, fosters compliance and provides satisfying outcomes. Robin DiMatteo, et al. revealed that patients expect good relationships and polite communication from the health care staff. It also affects the patients' decision making to remain committed to their physicians. In general, the greater the friendliness, good communication and empathy excelled by the health care professionals, results in positive correlation with the patient. The literature showed that studies regarding the physician's behaviour, communication skills are limited and lacking.

3.5. Waiting time

In general, waiting time is defined as time spent by the patient to consult a doctor for a specific problem but it can also include patients under observation, followed by those patients who waited for routine diagnostic tests and lastly, those who waited for discharge (Tiwari et al., 2014). Studies from the developed countries v.s. developing countries showed that waiting time is correlated with patient satisfaction. Managing waiting time is important for costs and retaining clientele (Bleustein, et al., 2014). In this study, was examined the relationships between reported wait times and various measures of satisfaction across the ambulatory centres in the USA. On average, respondents in this study waited about 23 minutes in the waiting room and 15 minutes in the exam room. In various health care centres in the USA patients reported high dissatisfaction about extended waiting time to see a doctor that compliance was poor with low rates (Cuevas and Joseph, 2012). A British study conducted in 1992 concluded that patient satisfaction is directly associated with clinic waiting times (Maitra and Chikhani, 1992) and that long wait times are perceived as a health care barrier argued by Kurata et al., (1992).

With particular interest is an Indian study on waiting time, communication skills and satisfaction in a public hospital, Kolkata, reports that the median waiting time was about 30 minutes (patient expectation was about 13 minutes) and that only 57% were seen within 15 minutes of their arrival in the waiting room.

3.6. Service quality and satisfaction

Preceding studies show a positive correlation between service quality and customer satisfaction (Loveman, 1998; Heskett et al., 1997, pp. 236-257). In the healthcare industry, the latest research on patient satisfaction shows that has a strong link between service quality and satisfaction.

Delivering good service quality can be used as a relevant strategy for achievement in business and sustain in the competitive environment. (Lim and Tang, 2000; Masood et al., 2009; Andronikidis et al., 2009). In the literature review by Kitapci et al., (2014) shows several examples that empathy and assurance dimensions, which mainly represent word-of-mouth communication (WOM), social environment links had a strong influence on patient's perceptions to come back to the hospital which is related to the cognitive construct (e.g., Choi et al., 2004; Oliver, 1997; Brady and Robertson, 2001). In the research by (Gronroos, 2000) service quality described two main features): (1) a technical dimension or core service); and (2) a process/functional dimension or how the service is provided.

The most exploited SERVQUAL instrument in the Western countries health care industry indicates that while all three dimensions are somewhat influential on patient satisfaction, however, in public hospitals tangibles dimension seems to have no significant influence on satisfaction (Yeşilada, F. and Direktör E., 2010).

Patient satisfaction scale is measured through 16 items measuring satisfaction on a 5-point scale ranging from "poor" to "excellent. Sample times include the time waiting, possibility to make an appointment with the doctor, administrative procedures, hygiene in the hospitals, experience with the health care professionals, communication, diagnosis reporting, modern medical equipment.

4. Methods

The study is a cross-sectional which mapping perceptions of Macedonian healthcare customers regarding the health care quality experience offered by private and state healthcare settings in spring semester of 2019. The study was carried out using convenient sampling targeting all participants in the country from 18 – 75 ages which are using medical and non medical services from public medical services in the country using secondary data sets with SERVQUAL scale model. This method of sampling enabled us to describe the views of participants from different demographic structure. The patients from different age, gender or education have different experiences regarding patients satisfaction.

Keeping abreast with previously conducted studies in healthcare settings, a sample size of 453 respondents was analyzed. Thus, this sample is considered as a good theoretical part because participants come from different backgrounds and comprise various age groups, different experience and different working cultural Mohamed 2015 (cited in Leong et al., 2013).

In this research study, the factor analysis was used to group 12 questions measuring patient satisfaction under certain extent with Promax oblique rotation using the satisfaction responses gauged by importance. Data cleaning was employed with the entire data set. Cases with missing values have been removed i.e., list-wise deletion was employed in the analysis, whereas with the continuous variables the compute method was applied to replace it with median value. The reliability of the questionnaire was evaluated using Cronbach's Alpha coefficient. Then, a structural equation measurement model was built to confirm the validity of the satisfaction instrument. In the analysis framework, we have performed a structural equation model (SEM) to determine the relationships between one or more independent variables (IVs), either continuous or discrete, and one or more dependent variables (DVs), or in our study more precisely to see the influence of patient characteristics to patient satisfaction. The SEM model uses two kinds of models: a measurement model and a structural model. A measurement model is one that specifies some number of latent, unmeasured variables or factors, each with a

specified number of measured indicators or variables. A structural model includes a set of hypothesized relationships among the constructs or variables (Ogbeibu, Senadjki, & Gaskin, 2018).

The assessment of the model fitted well and several indices were applied (GFI, NLI, TLI and CFI). In general, GFI, NLI and TLI with a value close or to above 0.90 indicates a good model fit. The Comparative Fit Index (CFI) was used to measure the overall fit with an expected value of 1.0 when the estimated model is true and values of 0.95 or higher indicate close to fit (Hu and Bentler, 1999). We also used the Root Mean Squared Error of Approximation (RMSEA) is a measure of the average explained variances and covariances in the model. The accepted value of RMSEA is 0.05.

We present the measurement model in Figure. 2 and the structural model is demonstrated in Figure. 3. The oval circles correspond to unobserved, latent variables, and the squares represent the observed variables. Other latent variables are the residual factors (measurement errors of observed variables) from e_1 to e _12 for patient satisfaction. The variables labelled as patient characteristics (age, gender/sex, educations, jobs, nationality and insurance) are exogenous variables showed later in the structural model. All analyses were conducted by using the SPSS.26 for Windows computer package and Amos 26.

5. Results

Amongst the respondents, 19 percent were males and 78 percent were females. About 13 per cent were aged between 18-25 years; 31 percent aged between 26 to 35 years; 32 percent aged between 36 to 45 years, and 14 ppercentaged between 46 to 55 years. The sample comprised a good mixture of different generational cohorts and can be assumed as a representative sample of the population. The complete demographic profile of the participants is given in Table 1.

Table 1: Demographic profile of participants (n=453)

Gender	N0	%
Female	360	78.8
Male	91	19.9
Age		
18-25 years old	60	13.1
26-35 years old	146	31.9
36-45 years old	152	33.2
46-55 years old	66	14.4
56-years and above	25	5.9
Education		
High education/Faculty	278	60.8
Master degree	79	17.2
Secondary education	91	19.9
Other	1	0.2
Occupation		
Employed in private sector	215	47
Employed in state sector	114	24.9
Employed in private and state sector as a second job	8	1.7
Not employed	91	19.9
Other	8	1.7

Explanatory Factor analysis (EFA) reduced the data file from 12 satisfaction variables to three components using Maximum Likelihood extraction. The Kaiser Meyer Olkin (KMO) sampling adequacy measure was 0.902 and Bartlett's measure was significant ($p<0.001$). These indices inferred that the matrix was well fitted for the factor analysis. The factor loads showed in Table 2, explained 66.2 percent of total variance after using Promax

rotation and produced three main factors. Assessment loaded items on each component showed a high degree of individual item reliability, as all items have loadings of greater than 0.50 on each component. Table 2 is demonstrated that the three main components of the EFA including, hospital environment, admin and interaction with health care professionals.

The reliability measure for each component was tested with Cronbach's Alpha (α). All component measures were greater than .702 as it is indicated in Table 2, which shows strong internal reliability among components. The reliability levels for the three components were .842 for the hospital environment, .835 for admin and .702 for interaction with health care professionals. Cronbach's Alpha test of the whole instrument was .903.

Table 3 shows the correlations between patient and patients' characteristics. As shown in Table 3, not many of the demographic (patients' characteristics) variables were highly correlated except the age (0.03).

Table 2: EFA (Factor Analysis)

Factors	**1**	**2**	**3**
Cronbach's Alpha (α)	**.842**	**.835**	**.702**
Quality of Rooms	1.020		
Parking	.801		
Waiting Rooms	.768		
Lab	.387		
Time of Scheduled Appointment		.891	
Admin		.744	
Time to see the Dr		.664	
Check up		.654	
Diagnosis			.846
Experienced profess.			.680
Available specialists			.528

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

5.1. Measurement model

The measurement model manifests only the measured variables reviewing the latent construct or endogenous variables and errors of measurement. It shows how well the observed variables jointly correlate for measuring the latent variables.

The statistic values of the measurement model show that the model is with a good fit (Chi-square(df) = 51; p=0.000. The measure fit indices indicate a fairly good fit of this model data (NFI=.936; CFI=.956; TLI=.943; RMSEA = .070), based on the recommended standards values to assess the overall fit of the model.

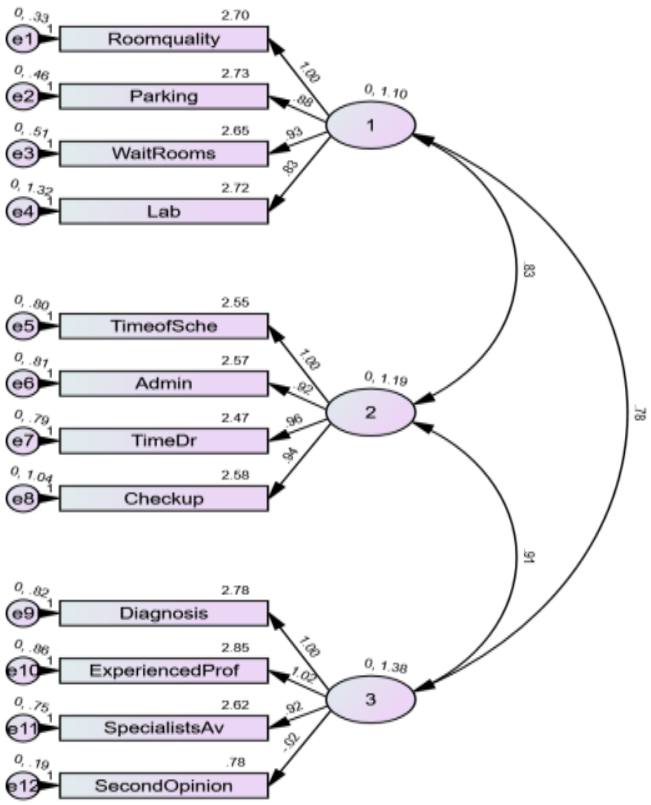

Figure 2: Initial measurement model

5.2. Correlations between patients' characteristics and patient satisfaction

Table 3: Results of Correlation Model

	Gender	Age	Education	Jobs	Satisfaction
Gender		.975	.003	.873	.369
Age	.975		.803	.000	**.003**
Education	.003	.803		.810	.092
Jobs	.873	.000	.810		.178
Satisfaction	.369	.003	.092	.178	

**. Correlation is significant at the 0.01 level.

The initial model with patients characteristics as exogenous variables is presented in Figure 4. We have tested this structural model by adding five more constructs. The model and results are shown below which can indicate that education is one of the significant constructs in the path model with the second factor. The coefficient of determination for the initial model is 0.13. In other words, the initial model explained about 13 percent total variance in patient satisfaction. However, the goodness-of-fit values for the initial structural model are very close to fit (Chi-square = 190.530, Degrees of freedom = 106, Probability level = .000; with the recommended values of indices for NFI =.092, TLI=.949, CFI=.965, RMSEA =0.44. Within those values of indices, the RMSEA is a higher than accepted value of 0.05.

Because the previous structural model indices indicate certain variations we have built-in a third structural model where we have removed part of the variables from the patient characteristics as it demonstrated no significant effect. We have retained only the education variable in the revised model. The model and the result values are showed in Figure 4. The model fit statistics show the degree to which the third
model improved as compared

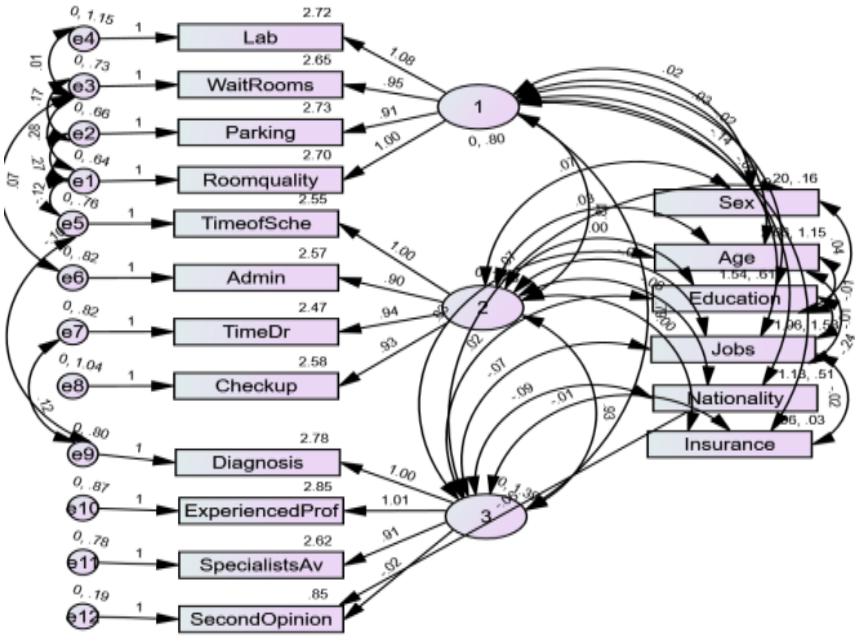

Figure 3. Structural model

to the initial model. The Chi-square dropped to 117.353(df=52), NFI=.952, TLI-958 and CFI=.972 which shows a good model of fit and RMSEA value has improved to .055. This model shows an acceptable fit where only education exogenous variable explained patient satisfaction at a certain extent however, not at high effect.

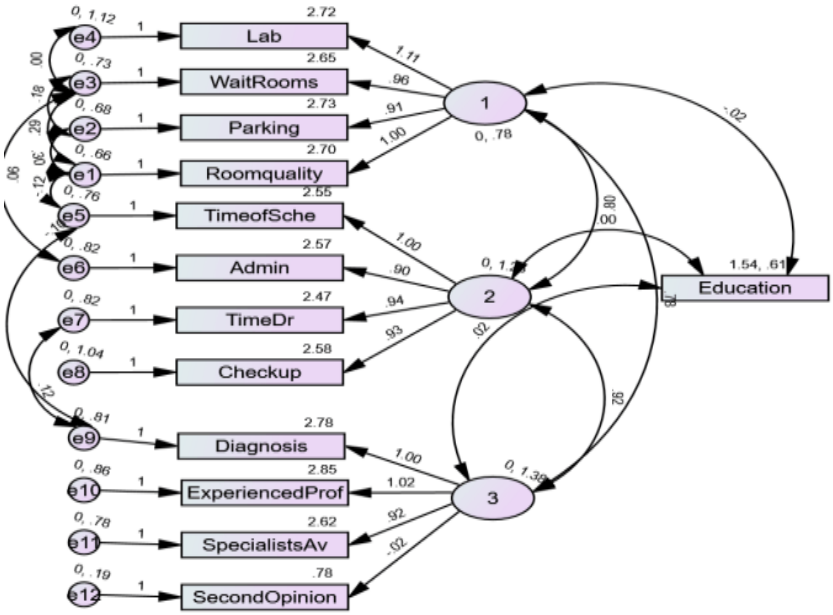

Figure 4: Revised structural model

6. Discussion

The first part of this research study described the 16- item scale that can be used to measure patient satisfaction for both outpatients and in-patients in North Macedonia. The (EFA) analysis identified three distinct components or factors of patient satisfaction: (i) hospital environment, (ii) medical administration and (iii) interactions with professionals or staff behaviour. These components provide information on the 'structure' and

'process' of care explained by Donabedian(2005) which reflects well with the conceptual model of this research study. These three factors obtained after exploratory factor analysis have a significant impact on patient satisfaction. This path estimates for our model provide insights into relationships among various constructs. We have assessed the reliability and validity of the satisfaction scale in various ways, and the scale was found to have good reliability and validity across different patient characteristics and hospital environment. These findings go along with the findings of Braunsberger and Gates (2002) and comply with our expectations the results with other research studies. The regression results and the structural models provide further insights and guidance about which aspects of patient satisfaction could have a great impact on overall patient satisfaction. Our finding showed that education of patients plays important role in assessing patient satisfaction. However, other exogenous variables such as age, gender and jobs, insurance demonstrated to be statistically insignificant. Similar findings are found in the studies in Turkey (Sahin et. all., 2007) compared with numerous other studies that patients characteristics influence patient satisfaction in general. Conversely, Tucker (2002) states that are unclear, contradictory relationships exist between satisfaction and gender, race, marital status and social class.

This study is a first of its kind in North Macedonia which could fill the gap in the research public health literature. The study has several limitations. The data collection was carried out through an online distributed survey which manifests perceptions on patients' satisfaction during their life course or some patients might respond to their last visit experience. The time of data collection was limited.

7. Implication for practice of the research study

We have presented a model that measures healthcare quality and patient satisfaction in different health care settings in North Macedonia which encompasses patients demographic characteristics and service quality variables. The research study's theoretical implication shows an association with education and age in relation to patient satisfaction. The results indicated that patient satisfaction have indirect effect on service quality and using non-medical services in an overall level. Thus, these results can be used by health care establishments in designing and improving their health strategies. Our findings suggest a model for health care providers to which will guide in quality improvement aspects. It is very important to take into consideration patients perceptions in evaluating service quality dimensions in public health care environments in North Macedonia.

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Is there a Difference between the Timed Up and Go Test and Physical Function due to the Difference in Perception of Slip?

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Abstract
The purpose of this study was to examine whether there are differences in the timed up and go (TUG) test results and physical functions due to the differences in slip recognition when performing TUG on wood flooring. The study consisted of 30 community-dwelling elderly subjects, aging over 65 years old. The differences in the perception of floor slippage before and after TUG were as follows: (1) slippery-slipped group (S-S group), (2) slippery-not slipped group (S-N group), and (3) not slippery-not slipped group (N-N group). The modified falls efficacy scale, grip strength, knee extension strength, one-leg standing time, functional reach test, Trail Making Test (TMT), two-step test were used in this study. The results showed no statistically significant difference in TUG test. However, statistically significant difference was observed in TMT between the S-S and N-N groups ($p = 0.019$, $r = 0.51$, respectively) and between the S-S and S-N groups ($p = 0.003$, $r = 0.65$, respectively). It was found that there was no statistically significant difference in TUG results due to the recognition differences of slippage. However, it was suggested that the subject who reported a history of slippage had a high attention function and could pay attention to the floor environment.

Keywords: Fall prevention, Environmental Adaptation, Attention function, Slip, Elderly

1. Introduction

1.Background

Falls and fall-related fractures are serious problems in the elderly aged 65 years and above. They are at the highest risk of falling, where 1 in 3 elderly people living in the community experience falling at least once a year (Tinetti ME, 1988).

In a systematic review (Cameron ID et al., 2018), the factors involved in falls in older adults can be classified as either internal or external. Internal risk factors include physical and mental function, history, and complications, whereas external risk factors include home environment and tools. It is necessary to recognize both external and internal factors accurately when an elderly person falls. It has been reported that stumbling or slipping are the most common causes of falls among the elderly, accounting for 20%–30% of all falls (Tang PF, 1998). It is estimated that slipping is relatively common in home environments, such as in the bathrooms, during rainy days, and while walking on tatami mats and wooden floors.

According to previous study (Ono H et al., 1985), the coefficient of slip resistance (CSR) is used to measure floor slipperiness. The lower the CSR is, the more slippery the floor is, and hence, the more likely it is to slip and fall. Floors in Japan are usually made of wood, tatami mats, or carpet. The CSR range of wooden floors, which is between 0.2 and 0.6, is said to be the most slippery followed by tatami mats and carpets, in that order. A study that investigated the difference in gait between flooring, tatami mats, and carpeted floors reported that the stride and ankle flexion angle of wooden floors were smaller than that of other floors (Tanaka S et al., 2011). This suggests that the subject unconsciously changes movements on slippery floor surfaces, such as wooden flooring.

In our previous study (Kubo K et al., 2021), the timed up and go test (TUG)was performed in three conditions: wooden flooring, tatami mats, and carpeted floors. The results showed a delayed wooden flooring condition time and increased number of steps.

They were also investigated in terms of perceptions of slippage. Most of the respondents reported slippage on the wooden flooring, while some respondents did not slip on the wooden flooring. In other words, there are individual differences in the slipperiness perception, which raises the question of which factors affect the differences in the slipperiness perception and whether these differences in perception affect the TUG results.

1.2 Purpose

The purpose of this study was to examine whether there are differences in TUG results and physical functions due to differences in slip recognition when performing TUG on wooden flooring.

2. Method

2.1 Subjects

Thirty elderly subjects (27 females and 3 males, age 79.2±4.7 years, height 149.9±6.6 cm, and weight 50.3±8.1 kg) living in the community were recruited in our study. These subjects were independent in their Activities of Daily Living (ADLs) and had the opportunity to go out for shopping or exercise classes.

This study was approved by the Ethics Committee of the Takasaki University of Health and Welfare (approval number: 3080) and was performed in accordance with the ethical principles of the Declaration of Helsinki.

2.2 Study Design

The differences in floor slippage perceptions before and after TUG were as follows: (1) slippery-slipped group (S-S group), (2) slippery-not slipped group (S-N group), (3) not slippery-not slipped group (N-N group), and (4) not slippery-slipped group (N-S group). There were 13 patients in the S-S group, 7 in the S-N group, 8 in the N-N group, and 0 in the N-S group. Thus, the results were compared among the three groups except the N-S group.

2.3 Measurements

2.3.1 Physical Functions

The grip strength, knee extension strength (Yamasaki H et al., 2001), one-leg standing time, functional reach test (Duncan PW et al., 1990), two-step test (Muranaga S et al., 2003), Trail Making Test (TMT) (Corrigan JD et al., 1987), and modified fall efficacy scale (Hill KD, 1996) were used to measure mental and physical functions.

2.3.2 Timed up and go test (TUG) Parameters

TUG was measured using a modified version of the Podsiadlo's method (Podsiadlo D, 1991). We measured the time or number of steps it took to walk out of a seated position, fold over a cone 3 m away, and sit down. A wooden flooring (3.5 m wide and 1.8 m deep) used in ordinary houses and a chair without armrests were used (Figure 1). The subject walked barefoot as fast as possible (Shumway-Cook A, 2000). To prepare for falls, a physical therapist was placed near the subject, providing direct assistance if they became wobbly and were expected to fall.

The TUG time was measured from standing up to sitting down using an up and go instrument (Takei Scientific Instruments Co., Ltd. T.K.K.5804). The values were recorded up to two decimal places after rounding off the third decimal place.

The number of steps was measured from a video camera on the frontal or sagittal plane. If any of the feet came in contact with the ground, it was considered as a one step. The respondents were asked to indicate their slippage perceptions of the floor before and after the TUG using a two-response scale: "slippery-slipped" and "not slippery-not slipped."

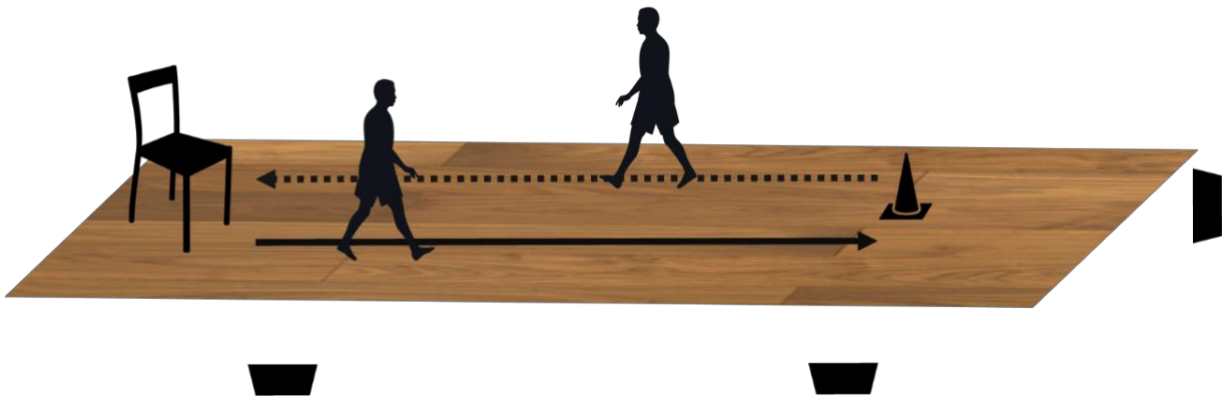

Figure 1: Measurement environment

2.4 Analysis

Using the one-way ANOVA or Kruskal-Wallis test, the baseline information, physical function, and TUG parameters of the three groups were compared, while subsequent comparisons between the groups were performed using the Tukey method or Mann-Whitney U test for items found to be significantly different. The SPSS (IBM, version 25) was used for statistical processing, with a significance level of 5%.

3. Results

3.1 Basic Information

The results of the basic information are shown in Table 1.

Table 1: Comparison of basic information on different perceptions of slippage

	S – S Group (n=13)	S – N Group (n=8)	N – N Group (n=9)	p value
Gender (male : female)	2:11	0:8	1:8	
Age (years)	78.0 (76.0-80.0)	82.0 (77.0-83.0)	80.5 (78.5-83.5)	0.279
Height (cm)	150.1 (147.8-155)	148.9 (146.2-153)	149.0 (146.2-153.9)	0.539
Weight (kg)	47.4 (46-57.1)	52.0 (43.1-56.3)	49.0 (46.1-51.1)	0.856

Values are presented as median (1st quartile–3rd quartile).
S − S＝slippery – slipped, S − N＝slippery – not slipped, N − N＝not slippery – not slipped

3.2 TUG Parameters

The results of TUG parameters are shown in Table 2. No significant difference was observed in TUG time and step count among the groups

Table 2: Comparison of TUG parameters on different perceptions of slippage

	S – S Group (n=13)	S – N Group (n=8)	N – N Group (n=9)	p value
Time (sec)	7.3 (6.6-8.1)	7.9 (6.5-9.8)	7.0. (6.1-7.8)	0.751
Number of steps (steps)	14 (13-15)	13.5 (12.8-16.8)	15 (14-18)	0.272

Values are presented as median (1st quartile–3rd quartile).
S − S＝slippery – slipped, S − N＝slippery – not slipped, N − N＝not slippery – not slipped

3.3 Physical Functions

The results of the physical functions are shown in Table 3, with a significant difference in TMT ($p = 0.013$). A significant difference was observed in TMT be-tween the S-S and N-N groups ($p = 0.019$, $r = 0.51$, respectively) and between the S-S and S-N groups ($p = 0.003$, $r = 0.65$, respectively).

Table 3: Comparison of physical functions on different perceptions of slippage

	S – S Group (n=13)	S – N Group (n=9)	N – N Group (n=8)	p value
MFES (point)	134±9	133±12	136±11	0.816
Grip strength (kg)	21.5 (19.1-29.7)	22.4 (16.2-23.9)	22.8 (19.9-24.8)	0.652
Knee extension strength (%)	39.5 (32.4-50.8)	39.9 (37.9-50.1)	44.3 (39-51.4)	0.700
One-legged standing time (Sec)	14.8 (12.8-51.1)	6.0 (3.8-15.1)	14.5 (5.4-21.4)	0.204
FRT (cm)	32 (30-37)	21 (20-30)	34.5 (29-36)	0.072
TMT (Sec)	34.0 (29.50-42.61)	52.6 (50.1-76.4)	47.1 (44.0-98.4)	p<0.001
Two-step value	1.28 (1.17-1.34)	1.12 (1.04-1.29)	1.05 (0.93-1.31)	0.191

Values are presented as mean ± SD (range), or median (1st quartile–3rd quartile).
MFES＝Modified fall efficacy scale, FRT＝Functional reach test, TMT＝Trail making test
S − S＝slippery – slipped, S − N＝slippery – not slipped, N − N＝not slippery – not slipped

4. Discussion

The slippage perception among the three groups showed no significant differences in the time or step count. There is a reduced gait on slippery floor surfaces, which avoids slipping. In the present study, there were no differences in TUG results due to differences in the slippage perception. In our study, there was a difference in the time and step count when the floor surface, where TUG was performed, was changed, suggesting the importance of setting the floor surface for TUGs. However, our results show that the time and step count were not affected by the differences in the subject's perception of slippage when TUG was implemented on the same floor.

A significant difference was observed in TMT in physical and mental functioning, with shorter periods of time in the S-S group. The mean TMT in healthy elderly Japanese people between 60 and 85 years of age was reported to be 52.6±17.4 (25–110) seconds (Harada H et al., 2006). Compared to the previous study, the time period observed in the S-S group was faster, while that observed in the S-N group was average. TMT is a measure of attentional function centered in the frontal lobe, which is needed to pay attention to several objects and necessary objects in the daily life. Attention is a fundamental component of various cognitive functions (Kashima H et al., 1986), which is necessary to mobilize appropriate attention for proper cognitive functioning. The S-S group may have paid more attention to the floor environment than the other groups and may have felt that they slipped. By accurately identifying slippery floor surfaces, the who is able to cope with the loss of balance if it slips. It is important to have an attentional function to accurately understand the environment. In addition, other physical functions of the subjects may have been high and not easily differed from each other.

The flooring with a glossy, painted material was used in this study. It is said that the perception of slippage is affected by the visual influence and tactile differences between the elderly and young and that the elderly are less sensitive to slippage (Ohkoshi M et al., 2011), (Hotta S et al., 2017). We suspect that the subjects with impaired vision were not able to accurately perceive the gloss and surface materials of the floor surface before TUG.

In addition, sensitivity to touch is significantly decreased, especially in the lower limbs. The two-point discrimination of the big toe is lower in the elderly who repeatedly fall than in those who never fall (Melzer I, 2004). The slippage or condition of the floor is the input from the plantar sensation. However, the floor slippage information may not be the correct input during the TUG due to the loss of sensation. From these observations, it is suggested that the difference in slip-page perception may have been influenced by the senses, such as sight and touch.

The results of the present study support that the people who perceive that they have slipped on a slippery floor surface have higher attentional functions and are able to pay attention to their environment. Therefore, it is likely that people with higher attentional functions are more predictive of slippage. Improving attentional function to prevent slips and falls is suggested to be necessary.

One of the limitations of this study is the lack of evaluation content on slippage. We did not take into account the reasoning behind their perception of slippage as our study was performed subjectively. Furthermore, because we did not measure the sensation, we could not clarify the extent of the effect of the sensation on the perception of slippage. In addition, many of the subjects had relatively high physical functions, making it difficult to find a difference in the results.

Acknowledgments
The slippage perception was found to have no effect on the results of the TUG. However, the TMT values of the subjects who perceived slipping were higher, suggesting a difference in perception of slipping, which may be influenced by attentional functions.

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Dexmedetomidine as a Heart Rate Control for Off-Pump Coronary Artery Bypass Surgery

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Abstract
Introduction: The traditional surgical approach is performed under cardiac arrest with cardiopulmonary bypass (CPB), which has the potential to result in myocardial injuries. In 1990s, when researchers developed efficient mechanical stabilizer devices, Off-pump coronary artery bypass (OPCAB) gained more widespread interest, as it's associated with many significant benefits. Avoidance of tachycardia is a goal for anesthetic management during OPCAB surgery. A short-acting Beta-blocker is needed for lowering excessive increases in heart rate. However, in some hospitals these drugs were not available. Case: A 53-yr-old, 73 kg man with a three-vessel coronary arterial disease with left main disease was scheduled for elective OPCAB surgery. Patient has a medical history of heart attack and hypertension. Preoperative echocardiography shows reduced LV systolic function, diastolic dysfunction grade I, with LVEF 47%. Throughout the hour after induction, HR increased in a constant manner to a persistent of 85-90 bpm despite additional fentanyl given. We didn't have any intravenous beta blocker drug and therefore we started dexmedetomidine. HR decreased to 55-60 bpm and remained at that value throughout the surgical procedure. Patient extubated in OR and transferred to ICU. After 6 days, he was discharged from the hospital without any complications. Conclusion: Perioperative administration of Dexmedetomidine is an effective adjuvant to general anaesthesia, attenuates the stress response to intubation, provides minimal heart rate variations, enabling smooth extubation, also provides adequate sedation in the post-operative period.

Keywords: Anesthesia Management, OPCAB, Dexmedetomidine

Introduction

Coronary artery bypass grafting (CABG) is an effective method of treating coronary artery stenosis. The traditional surgical approach is performed under cardiac arrest with cardiopulmonary bypass (CPB), which has the potential to result in myocardial injuries. The inherent risks of CPB and aortic cross-clamping continued to be a major factor in CABG morbidity and mortality. Avoiding CPB altogether seemed to offer a solution. It was not until the middle to late 1990s, when surgical researchers developed efficient mechanical stabilizer devices that minimized motion around the anastomotic site, Off-pump coronary artery bypass (OPCAB) gained more widespread interest. OPCAB was related to significant decreases in AF, quantities of patients transfused, respiratory infections, need for inotropes, duration of ventilation, ICU LOS, and hospital LOS. The pace and tempo of OPCAB surgery differ significantly from that of conventional CABG. Surgical manipulations involve a

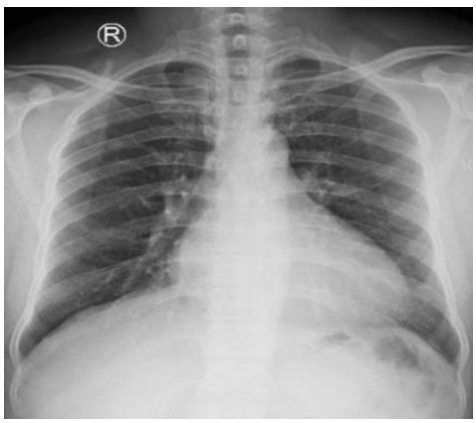
variety of geometric distortions of the cardiac anatomy, with resulting hemodynamic impacts. Communication between all members of the surgical team and anticipation of these changes are vitally important to minimize resulting adverse hemodynamic effects on the heart and different organs (Kaplan, 2018).

Increasing myocardial oxygen supply and reducing demand/ consumption can improve myocardial oxygen balance. Oxygen consumption is accomplished by lowering the heart rate and contractility, and can be accomplished through pharmacological agents such as beta-blockers and calcium antagonists. Avoidance of tachycardia is a commonly described goal for anesthetic management during coronary artery bypass graft OPCAB surgery. A short-acting Beta-blocker is needed for lowering excessive increases in heart rate (Chassot *et al.*, 2004).

However, in some hospitals, intravenous beta blocker drugs were not available as for the situation at the author's hospital. Several alternative steps are taken to lower the pulse, one of them is utilizing Dexmedetomidine. Dexmedetomidine with the central 2 agonist effect decreases the central sympathetic drive and hence decreases the stress response to *intubation*. By minimizing the variability in the heart rate it provides a suitable condition for grafting in off pump coronary artery bypass grafting surgeries. Dexmedetomidine with its sedation and analgesic property when continued post-operatively provides adequate sedation also reduces the hemodynamic stress response during extubation. Lack of respiratory depression, arousal sedation and hemodynamic stability makes Dexmedetomidine a better choice to attenuate the pressor response to extubation with an added advantage of preventing emergence delirium (Chassot *et al.*, 2004).

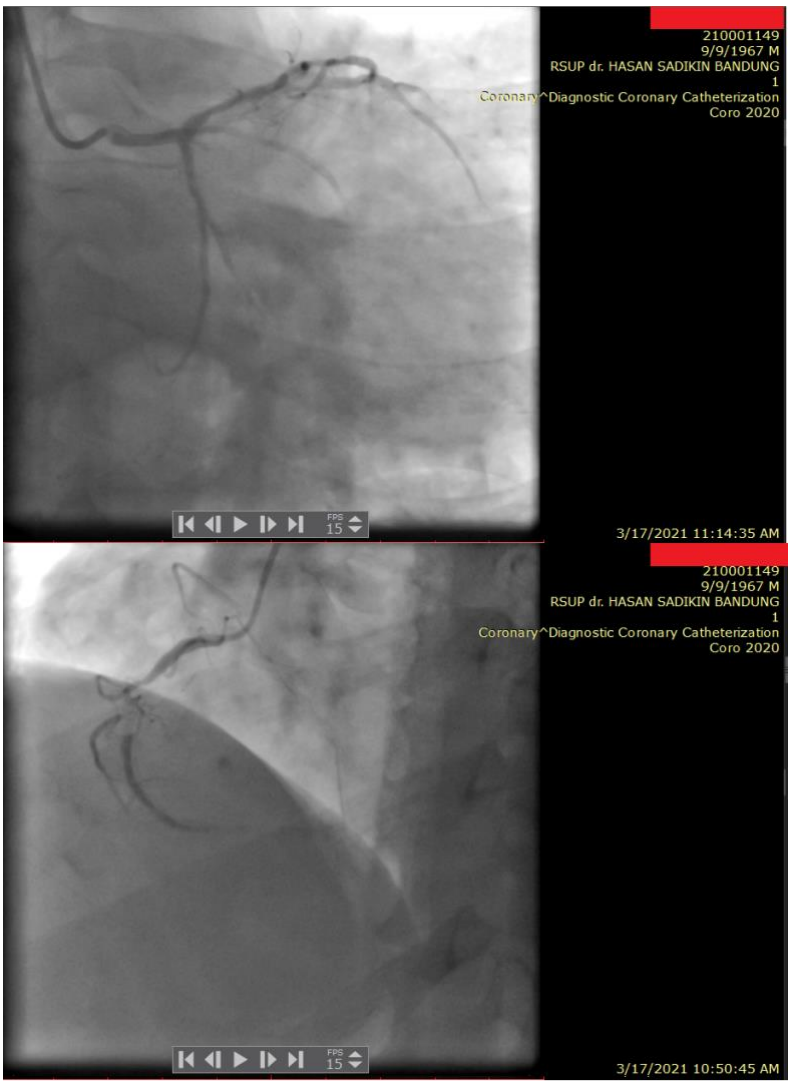
Case Report

A 53-yr-old, 73 kg man with a three vessel coronary arterial disease with left main disease was scheduled for elective Off-pump coronary revascularization (OPCAB). Patients with complaints of chest pain and shortness of breath especially during strenuous activities. Patient has a medical history of heart attack and hypertension. The patient had no history of diabetes, or obesity and was taking Glyceryl trinitrate 2x 2.5 mg, Bisoprolol 1x5 mg, Simvastatin 1x40mg, Acetylsalicylic Acid 80 mg. Patient was a smoker and his preoperative respiratory function tests result was mild restrictive and cardiomegaly was found on the X-rays (fig 1). Arterial blood gas analysis was normal. In the preoperative review of echocardiography we given result: dilated LA, concentric LVH, reduced LV systolic function with RMWA, diastolic dysfunction grade I, normal valves, low probability of PH, normal RV contractility with LVEF 47%.



Picture 1: Patient Chest Xray

After placement of a radial artery catheter and a pulmonary artery catheter, we installed standard monitoring and preoxygenated with 100% oxygen. Preinduction hemodynamic variables were all within normal range: BP was 150/70 mm Hg, HR was 75 bpm (sinus rhythm), and pulmonary artery pressure was 22/10 mm Hg. The preinduction arterial blood gas analysis showed pH 7.35, Po2 102 mm Hg, Pco2 38,6 mm Hg, HCO3 21,6 Base excess -3 mmol/L, Hemoglobin 14,6, Hematocrit 40,6%, Na 137 mmol/L, K 4.1 mmol/L, and glucose 111 mg/dL.



Picture 2: Coronary angiograph

Anesthesia was induced with Midazolam 7 mg, Fentanyl 400 mcg, Propofol 20mg and Rocuronium 70 mg. During the minutes after the induction and intubation, the BP decreased to 125/70 mm Hg; all other variables remained unchanged. Anesthesia was maintained with Sevoflurane 2-3vol% with end-tidal concentrations of 32-36 mmHg. An additional dose of 50 mcg fentanyl was given before incision. Patient's lung was ventilated with a volume controlled mode with 50% oxygen.

Throughout the hour after incision, while the surgeon was dissecting the internal mammary artery and starting the graft anastomosis, the HR increased in a constant manner to a persistent of 85-90 bpm despite additional fentanyl given. BP increased simultaneously to 140/65 mm Hg. Central venous pressure, pulmonary artery pressure remained unchanged. No additional drugs had been administered. Furthermore, throughout the entire operation the pulse oximeter read saturations of 100%, the end-tidal CO2 concentrations ranged from 32 to 36 mm Hg, and the patient was not febrile.

In the rapidly changing setting of OPCAB surgery, we didn't have any intravenous beta blocker drug and therefore we started dexmedetomidine, which is usually administered for ICU transfer and ventilator weaning. The initial loading dose, which is usually started after chest closure, was initiated. Dexmedetomidine infusion was started at a rate of 0.3 mcg/kg/hour. Within 15 min, the HR decreased to 55-60 bpm and remained at that value throughout the remainder of the surgical procedure. BP decreased within 30 min to 105/55 mm Hg and remained in that range until ooperation is over. Patient extubated in OR and transferred to ICU with stable hemodynamic. Dexmedetomidine infusion 0,2 mcg/kg/hour was continued in the ICU, and HR remained at 70–75 bpm over 24 h. After 6 days, he was discharged from the hospital without any complications.

OPCAB

The inherent risks of CPB and aortic cross-clamping kept on being a main consideration in CABG morbidity and mortality. Avoiding CPB altogether appeared to offer a solution. It was not until the middle to late 1990s, when surgical researchers created efficient mechanical stabilizer devices that minimized movement around the anastomotic site, that OPCAB surgery gained more widespread interest OPCAB was associated with significant decreases in AF (odds ratio [OR] = 0.58), quantities of patients transfused (OR = 0.43), respiratory infections (OR = 0.41), need for inotropes (OR = 0.48), duration of ventilation (weighted mean difference [WMD] of 3.4 hours), ICU LOS (WMD of 0.3 day), and hospital LOS (WMD of 1.0 days). Changes in neurocognitive dysfunction were not different in the immediate postoperative period; they were altogether significantly improved at 2 to 6 months (OR = 0.57), yet there were no differences seen at 12 months (Kaplan, 2018).

A working group of the AHA Council on Cardiovascular Surgery and Anesthesia concluded that OPCAB presumably was related with less bleeding, less renal dysfunction, less short term neurocognitive dysfunction (especially in patients with calcified aortas), and shorter hospital LOS. However, they likewise saw that it is more technically demanding, has a greater learning curve, and might be related with lower rates of long-term graft patency. Perhaps related to the greater technical demands, surgeons appear to place fewer grafts compared with on-pump CABG, and incomplete revascularization may influence long-term result. Puskas and colleagues reviewed 12,812 patients with CABG (1997–2006) and compared in-hospital major adverse events and long-term survival after OPCAB versus on-pump CABG. Long-term (10-year follow-up) results did not differ significantly between on-pump and off-pump patients. OPCAB was associated with significant reductions in short-term outcomes such as operative mortality, stroke, and major adverse cardiac events. Further information examination showed that short-term outcome (i.e., operative mortality rate) did not differ between the two groups for patients at low risk (i.e., The Society of Thoracic Surgeons [STS] predicted risk of death), whereas lower mortality rates were found for OPCAB surgery in high-risk patients (Kaplan, 2018).

Perioperative medication

In patients experiencing from coronary artery disease (CAD), perioperative utilization of b-blocking agents has been shown to be the most effective preventive measure. Possible advantage has been obtained with a2-agonists such as clonidine. Preoperative therapy of patients scheduled for coronary revascularization is maintained and included in the premedication. During the operation, a short-acting selective b1-blocker like esmolol, given as repeated bolus or continuous infusion, is effective in lowering excessive heart rate. However, it might seriously reduce LV function, as measured by a 42% decrease in mean arterial pressure and a 35% drop in cardiac output, resulting in a decrease in SvO2 from 81 to 65%. This LV depression leads to an increase in the pulmonary arterial pressure (PAP), whereas right intraventricular pressure might already be elevated because of right outflow tract compression or sudden mitral regurgitation (Chassot *et al.*, 2004).

A calcium antagonist such as diltiazem may have some theoretical advantages over b-blockers in the intraoperative period. It has been shown that, for the same decrease in heart rate, diltiazem lowers PAP, **though** esmolol tends to increase it. In addition to reducing AV conduction and heart rate as b-blockers do, calcium antagonists offer the advantage of inducing vasodilation in arterial conduits. Moreover, as an increase in intracellular free calcium is one of the primary causes of reperfusion injury and post ischemic myocardial dysfunction, calcium antagonists might prevent some post-ischaemic lesions. Some centers administer a continuous infusion of diltiazem (0.1 mg kg±1 h±1) from incision to chest closure. However, there is no objective evidence that calcium antagonists may improve outcome in OPCAB surgery.[2] Magnesium ions, up to 20 mmol in the form of chloride or sulphate, act similarly on myocardial cells; the only side effect is a slight arterial vasodilation. Moreover, its use during cardiac surgery tends to decrease the incidence of atrial tachycardia. Some centers recommend the use of MgCl2 or MgSO4 before pericardial opening (Chassot *et al.*, 2004).

In spite of the fact that progressions in cardiac surgery have remarkably reduced the incidences of mortality and serious complications, effective medication is needed to benefit patients going through cardiac surgery. Several studies have revealed that dexmedetomidine may have beneficial effects on clinical outcomes in patients with

cardiac surgery (Wang *et al.*, 2018). Dexmedetomidine, a potent a2 agonist decreases the sympathoadrenal activity leading to stability in heart rate and blood pressure. Its central CNS stimulation of parasympathetic outflow and inhibition of sympathetic outflow from locus coeruleus in the brainstem plays a prominent role in sedation and anxiolysis (V., S.R. and Adoni, 2018).

Dexmedetomidine treatment results in a sympathetic blockade, as it influences the α2-receptors in the central nervous system, restrains the release of the central sympathetic neurotransmitter (predominantly norepinephrine), reduces the peripheral sympathetic nervous tension and simultaneously excites the vagus nerve to reduce the heart rate (Ren *et al.*, 2013). When the heart rate decreases, the post-surgical cardiac oxygen demand also decreases, thus facilitating the maintenance of the myocardial oxygen supply and demand balance. In this manner, these effects not only protect the ischemic myocardium prior to grafting, , yet in addition decrease the post-surgical incidence of myocardial injury (Ren *et al.*, 2013).

Strong supportive evidence is found by pooling data from qualified RCTs, the utilization of dexmedetomidine led to significantly beneficial effects on systolic arterial pressure, mean arterial blood pressure, pulmonary artery mean pressure, and heart rate. A Meta analysis in 2018 also observed that administration of dexmedetomidine was related with a significant reduction in the duration of ICU stay and surgery, occurrence of postoperative delirium and the incidence of tachycardia (Wang *et al.*, 2018).

Dexmedetomidine is suggested to have sedative, anxiolytic, and analgesic abilities in patients undergoing cardiac surgery . In 2018 study, suggested that patients that were treated with dexmedetomidine had a lower heart rate, along with lower mean arterial blood pressure, systolic arterial pressure, pulmonary artery mean pressure, and reduced ICU stay than those in the control group (any treatment without dexmedetomidine). The occurrences of tachycardia, hypotension, and delirium decreased in the dexmedetomidine group, when compared to the control (any treatment without dexmedetomidine) group, demonstrating that patients who were treated with dexmedetomidine had lower risks of getting these events. Regarding bradycardia, the rate of this event was increased by about 3.4 times than those that did not ultilize dexmedetomidine. This suggested that the heart rates of patients using dexmedetomidine should be carefully monitored. Other unfavorable occasions including renal failure, stroke, pulmonary edema, and mortality were also compared, and the results did not suggest that there were any significant differences between dexmedetomidine and other medications or placebo, proving the safety of dexmedetomidine. Their findings also suggest that dexmedetomidine may not increase the incidence of hemodynamic complication (Wang *et al.*, 2018). Other investigation in 2018 concluded dexmedetomidine enabling smooth extubation with significant reduction in cough, breath holding and laryngospasm. Dexmedetomidine also provide adequate sedation in the post-operative period without causing respiratory depression (V., S.R. and Adoni, 2018).

Conclusion

Perioperative administration of Dexmedetomidine is an effective adjuvant to general anaesthesia, attenuates the stress response to intubation, provides minimal heart rate variations in hemodynamic parameters in OPCAB intraoperatively and enabling smooth extubation, also provides adequate sedation in the post-operative period.

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Health Insurance Uptake and Affordability of Care Among Patients with Hypertension in a Federal Teaching Hospital in Southwestern Nigeria

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Abstract
This study aims to assess health insurance uptake and affordability of care among patients with hypertension in a Federal Teaching Hospital in Southwestern Nigeria. This was a cross sectional study involving 138 hypertensive patient selected through systematic random sampling technique from the cardiology clinic of a Federal Teaching Hospital. A semi-structured, interviewer administered questionnaire was used to collect data. Analysis was done using Statistical Package for Social Sciences (SPSS) version 21. A significance level of 5% was used. The mean age (standard deviation) of the patients was 57.4 (12.8) years with median (interquartile range) monthly income of ₦46,500.00 (₦55,000.00) [US$129 (US$152.78)]. The health insurance uptake among them was 26.8%. Out of those who had no health insurance cover, 87.2% of them believed it could make their financial burden less and wish to be registered. Hypertensive patients enrolled under health insurance were significantly less likely to face financial difficulty when paying for drugs ($p<0.001$) and investigations ($p<0.001$). Additionally, these patients were significantly less likely to deny or defer project(s) in order to pay for their illness ($p=0.004$) and to have their source of livelihood being negatively affected by this illness ($p=0.002$). This study found a low health insurance uptake among hypertensive patients, even though most of the patients who had no health insurance cover were ready to enroll. Additionally, health insurance was identified to promote affordability of care among these patients. It is therefore crucial to put in place measures that will increase health insurance coverage among these patients.

Keywords: Health Insurance Uptake, Affordability of Care, Hypertension, Nigeria

Introduction

Hypertension is a chronic medical condition that significantly increases the risk of cardiovascular morbidities and mortalities (WHO, 2019; Parks K, 2015; Jeannette and Court, 2014). It is a modern epidemic affecting an estimated one billion people globally (Parks K, 2015; Akinlua et al, 2015), with most (two-third) living in developing countries (WHO, 2019; JNC-8, 2014), thus termed a silent killer, with an estimated 18 million deaths worldwide in 2015 (WHO, 2017). It was reported that Africa has the highest prevalence of hypertension, with about 46% of the population over 25 years of age living with the disease (Ajayi et al, 2016). Nigeria may contribute significantly to this health burden due to her large population.

The management of hypertension involves lifelong use of antihypertensive medications as well as lifestyle modification. These medications are relatively expensive (Bakare et al, 2016). Although a significant number of them are covered under the National Health Insurance Scheme (NHIS), nevertheless we are not sure of the proportion of hypertensive patients registered under this scheme. NHIS was launched in Nigeria in 2005 as part of the reform in health that was aimed to improve access, equity and quality in healthcare services delivery (Obalum and Fiberesima, 2012; Akande et al, 2012; Adegboyega and Abioye, 2017). Individuals registered under this scheme are expected to have access to adequate and affordable healthcare services (Okpani and Abimbola, 2015; Daramola, Adeniran and Akande, 2018). It is unfortunate that the coverage of NHIS in the country is still alarmingly low, leaving over 90% of the population especially the most vulnerable exposed to catastrophic health expenditures and impoverishment (Okpani and Abimbola, 2015, Garba and Ejembi, 2015; Okoronkwo et al, 2016). There is serious dependence on out of pocket (OOP) spending by the poor and vulnerable group despite its low financial risk protection (Akande et al, 2012; World Bank, 2020).

Health insurance is associated with higher healthcare utilization (Charles and Kioko, 2016), with different uptake rate being reported depending on the population and group that was studied. A study among Muslims in Kenya reported that 22% of them were enrolled under health insurance (Hassan, Mwaura-Tenambergen and Eunice, 2017) while 62% of pregnant women also in Kenya planned to pay for their delivery through insurance (Maina, Kithuka, and Tororei, 2016). Uptake of NHIS among Ghanaians was 67% (Alatinga and Williams, 2015), about 2% was found in Primary Health Centers in Zaria (Adegboyega and Abioye, 2017) while 65% was found among hypertensive patients in University Teaching Hospital, in Zaria (Oyati et al, 2016). A similar study carried out in a private hospital in Lagos showed that majority of their hypertensive patients were enrolled under health insurance (Ganiyu and Suleiman, 2014).

Additionally, it has been found that health insurance reduces the cost of care (Akande et al, 2012), nonetheless there are still challenges with cost of the insurance premium (Alatinga and Williams, 2015) as well as the ten percent being paid at the point of access (co-insurance). This study therefore aims to assess health insurance uptake and affordability of care among patients with hypertension in a Federal Teaching Hospital in Southwestern Nigeria. Few studies were found on health insurance uptake among hypertensive patient; however no study was found on the affordability of care of hypertension in Nigeria. Findings from this study would consequently enrich the literature and also provide vital information to policy makers for decision making.

Methods and Materials

This was a cross sectional study carried out in a Federal Teaching Hospital in Ekiti State, South West, Nigeria. This hospital is located in a semi-urban area and serves as referral center for all other health facility in the area. The cardiology clinic of the hospital was used for the study. Those eligible to participate in the study were hypertensive patients age 18 years and above who have been on treatment for at least 3 months. Those who were too ill to respond and who declined to give consent were excluded.

A minimum sample size of 138 hypertensive patients was calculated using the Fisher's formula, assuming a health insurance coverage of 10% (Bamgboye, 2014). Eligible hypertensive patients were selected through systematic sampling from the clinic. The monthly attendance from available records was used as the sampling frame. Patients biodata, clinical information, information on healthcare financing and affordability was collected

through a semi-structured, interviewer administered questionnaire. The study instrument was translated into the local language (Yoruba) for patients who may not be fluent in English language.

Data collected were analyzed using Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistics such as mean (standard deviation), frequencies and percentages were used in summarizing study variables. Pearson Chi-square test was performed to determine statistical significance of observed differences between health insurance group and non-health insurance group. A significance level of 5% was used. Ethical clearance was sought and obtained from the Human Research and Ethics Review Committee of Federal Teaching Hospital, Ido-Ekiti, Ekiti State, Nigeria.

Results

The mean age (standard deviation) of the respondents was 57.4 (12.8) years with median (interquartile range) monthly income of ₦46,500.00 (₦55,000.00) [US$129 (US$152.78)]. More than half (54.3%) were females and 84.8% practice Christianity. The most frequently used antihypertensive drugs among the respondents were the calcium channel blockers (72.5%), followed by the diuretic (60.1%). The commonest complication of hypertension was hypertensive heart disease/heart failure (22.5%). Arthritis (29.7) was the most common co-morbidity followed by diabetes mellitus (24.6%). Most (76.8%) of the participants visit the clinic for follow up once in a month. {Table 1}

Table 1: Socio-demographic and Other Characteristics of the Respondents

Variable	Frequency (n=138)	Percentage (%)
Age Group (Years)		
Mean ± Standard deviation	*57.4 ± 12.8*	
Sex		
Male	63	45.7
Female	75	54.3
Religion		
Christianity	117	84.8
Islam	21	15.2
Monthly Income (₦)		
Median ± Interquartile range	*46,500.00 ± 55,000.00*	
Frequency of Clinics Follow up		
More than a month	7	5.1
Monthly	106	76.8
Fortnightly	20	14.5
Weekly	5	3.6
Class of Drugs*		
Diuretic	83	60.1
Calcium Channel Blocker	100	72.5
Angiotensin Receptor Blocker	11	8.0
ACE Inhibitor	65	47.1
Beta Blocker	14	10.1
Alpha Blocker	6	4.3
Fixed Drug Combination	18	13.0
Others	37	26.8
Complications of hypertension*		
HHD/ Heart Failure	31	22.5
Stroke	16	11.6
Renal Failure	3	2.2
Visual Impairment	13	9.4

Co-Morbidities*		
Arthritis	41	29.7
Diabetes Mellitus	34	24.6
Chronic Respiratory Disease	6	4.3
Peptic Ulcer Disease	8	5.8
Others	6	4.3

*-Multiple response; HHD- Hypertensive heart disease

Thirty seven (26.8%) of the hypertensive patients were registered under a health insurance scheme. Out of the 101 respondents who had no health insurance cover, 88 (87.2%) of them believed it could make their financial burden less and wish to be registered. {Table 2}

Table 2: Health Insurance Uptake among Respondents

Variable	Frequency (n=138)	Percentage (%)
Are you registered with any health insurance?		
Yes	37	26.8
No	101	73.2
	(n=101)	
If no, do you think it could make your health financial burden less?		
Yes	88	87.2
No	13	12.8
Will you now wish to be registered?		
Yes	88	87.2
No	13	12.8

About one-fifth (20.3%) and 6.5% of the respondents agreed that it was financially difficult and very difficult to buy needed drugs respectively while a similar proportion of 21.0% and 7.2% stated that it was financially difficult and very difficult to also pay for investigations respectively. About one-third (32.6%) of the respondent had denied or deferred project(s), 16.7% had sold properties and 7.2% have had to stop their children school in order to pay for their health. More than a third (37.7%) agreed that their health challenges had affected their businesses and jobs negatively. {Table 3}

Table 3: Affordability of care among Respondents

Variable	**Frequency (N=138)**	**Percentage (%)**
How convenient is it for you financial wise to buy needed drugs?		
Very difficult	9	6.5
Difficult	28	20.3
Just okay	64	46.4
Convenient	22	15.9
Very Convenient	15	10.9
How convenient is it for you financial wise to pay for investigations?		
Very difficult	10	7.2
Difficult	29	21.0
Just okay	56	40.6
Convenient	26	18.9
Very Convenient	17	12.3
How often do you fail to do the above due to lack of money?		
Never	52	37.7
Rarely	51	37.0
Sometimes	26	18.8
Often	9	6.5

Have you ever sold personal properties in order to pay for your health?		
Yes	23	16.7
No	115	83.3
Have you stopped children school in order to pay for your health?		
Yes	10	7.2
No	128	92.8
Have you denied or deferred project(s) in order to pay for your health?		
Yes	45	32.6
No	93	67.4
Have your health challenges affected your business or job negatively?		
Yes	52	37.7
No	86	62.3

Table 4 explored the possible association between health insurance uptake and affordability of care. Hypertensive patients enrolled under health insurance were significantly less likely to face financial difficulty when buying needed drugs ($p<0.001$) and paying for investigations ($p<0.001$). Respondents registered under a health insurance were significantly less likely to deny or defer project(s) in order to pay for their health ($p=0.004$). Additionally, their health challenges were significantly less likely to affect their source of livelihood negatively ($p=0.002$).

Table 4: Association between Health Insurance Uptake and Affordability of care

Variables	**Health Insurance**		**Total N (%)**	X^2	***P-value***
	Yes n (%)	**No n (%)**			
How convenient is it for you financial wise to buy needed drugs?					
Very difficult	1(11.1)	8(88.9)	9	24.914[F]	**<0.001**
Difficult	4(14.3)	24(85.7)	28		
Just okay	10(15.6)	54(84.4)	64		
Convenient	13(59.1)	9(40.9)	22		
Very Convenient	9(60.0)	6(40.0)	15		
How convenient is it for you financial wise to pay for investigations?					
Very difficult	1(10.0)	9(90.0)	10	34.458[F]	**<0.001**
Difficult	3(10.3)	26(89.7)	29		
Just okay	7(12.5)	49(87.5)	56		
Convenient	14(53.8)	12(46.2)	26		
Very Convenient	12(70.6)	5(29.4)	17		
How often do you fail to do the above due to lack of money?					
Never	23(44.2)	29(55.8)	52	16.136[F]	**0.001**
Rarely	12(23.5)	39(76.5)	51		
Sometimes	2(7.7)	24(92.3)	26		
Often	0(0.0)	9(100.0)	9		
Have you ever sold personal properties in order to pay for your health?					
Yes	3(13.0)	20(87.0)	23	1.891[Y]	0.169
No	34(29.6)	81(70.4)	115		

Have you stopped children school in order to pay for your health?					
Yes	2(20.0)	8(80.0)	10	0.018[Y]	0.893
No	35(27.3)	93(72.7)	128		
Have you denied or deferred project(s) in order to pay for your health?					
Yes	5(11.1)	40(88.9)	45	8.388	**0.004**
No	32(34.4)	61(65.6)	93		
Has your health challenges affected your business or job negatively?					
Yes	6(11.5)	46(88.5)	52	9.919	**0.002**
No	31(36.0)	55(64.0)	86		

X^2: Pearson Chi Square; [Y]: Continuity Correction; [F]: Fisher's Exact Test

Discussion

The aim of this study was to assess health insurance uptake and affordability of care among patients with hypertension in a Federal Teaching Hospital. The mean age of the respondents was 57.4 years. This age is below the civil service retirement age in Nigeria, which shows that most of the respondents are still actively working. This is reflected in the median monthly income of ₦46,000 (US$129) which is above the civil minimum wage (₦30,000; US$83) in Nigeria (Trading Economics, 2020). It further translates into an income of US$4.3 per day which is above the World Bank international poverty line of $1.90 per day (World Bank, 2019). The average and middle socioeconomic class of patients seen in this health facility may be due to the fact that this group of people believed that tertiary health facility is for the affluent and enlightened, with specialist doctors to care for them and who are equipped enough to meet their needs (Whitehead, 1992). It has been reported that the poor and those in the lower socioeconomic class in Nigeria usually seek medical care from the primary health facilities which are usually not well structured and adequately equipped (Adegboyega and Abioye, 2017).

Furthermore, this study revealed that the health insurance uptake among the respondents was 26.8%. This result is lower than what was found among hypertensive patients in a private hospital in southwest Nigeria (Ganiyu and Suleiman, 2014) and in a Teaching Hospital in Northern Nigeria (Oyati et al, 2016). It is higher than what was found among patients in primary healthcare facilities in Northern Nigeria and among formal sector workers in Northern Nigeria (Adegboyega and Abioye, 2017; Adewole, Dairo, and Bolarinwa, 2016). Also, the uptake in this study is higher than the NHIS coverage among the general population of Nigerians (NHIS, 2015). This may be due to the setting and the characteristic of the population that was studied (Adegboyega and Abioye, 2017; Alatinga and Williams, 2015). In spite of the fact that the health insurance uptake among these patients is higher than that of the general population, it is still optimally low considering that about three-quarter of them had to pay directly for their care using post payment methods which make them vulnerable to high healthcare expenditure in case of serious illness, leaving them without financial risk protection. They are also at higher risk of catastrophic health expenditure, as it has been documented that out of pocket spending must be lower than 20% in a population in order to significantly reduce catastrophic health expenditure among them (WHO, 2014).

The study found that majority (87.2%) of those without health insurance cover believed that it could make their financial burden less and were willing to be enrolled. This is similar to the findings in the willing to join health insurance studies done among Namibians and teachers in Ethiopia (Tesfamichael, Mirkuzie, and Shimeles, 2014; Asfaw, Gustafsson-Wright, and Van der Gaag, 2008). It is higher than the willingness to join of 67.7% found in a Teaching Hospital in Southwest Nigeria (Esan O et al, 2020). This finding suggested that the respondents had good disposition toward enrollment into a health insurance scheme. This disposal toward health insurance may be due to their present healthcare need, as it was revealed that majority of them visit the clinic for follow up at least once in a month. Adverse selection in which sick people purchase health insurance is one of the challenges of the health insurance scheme (World Bank, 2020). Notwithstanding adverse selection has been taken care of through checks and balances in the design of social health insurance and should not stop the enrollment of those willing and ready to participate (World Bank, 2020). Therefore, stakeholders charged with executing and

expanding health insurance in Nigeria could leverage on the good disposition toward enrollment found in this study to improve uptake among these group of people (Adewole, Dairo, and Bolarinwa, 2016).

Another important finding in this study was that more than one-quarter of the patients faced varied degree of financial difficulty in paying for drugs and laboratory investigations. Over one third of them mentioned that their source of livelihood have been negatively affected by their illness; About a third (32.6%), 16.7% and 7.2% had denied or deferred project(s), sold properties and stopped children school respectively in order to pay for their health bills. It was also revealed that hypertensive patients under health insurance cover were significantly less likely to face financial difficulty when paying for drugs and investigations. Additionally, these patients were significantly less likely to deny or defer project(s) in order to pay for their illness and to have their source of livelihood being negatively affected by this illness. These findings imply that health insurance reduces the financial burden imposed by hypertension and promotes affordability of care of patients with this illness. Health insurance have been reported to reduces the financial burden of diseases (Akande et al, 2012), enhance resource mobilization and risk pooling (World Bank, 2020). It is a social security system that provides needed healthcare services to individual who are registered with it (NHIS, 2020), improves the health and well-being with the aim of achieving universal health coverage (Alatinga and Williams, 2015). It is therefore imperative to scale up health insurance among patients with hypertension in Federal Teaching Hospitals in Nigeria.

This study relied on quantitative data only. A qualitative method such as focus group discussion and in-depth interview in addition to the quantitative data would have made the study more robust and also identify some other factors that may affect affordability of care. Furthermore, this study was carried out in only one Federal Teaching Hospital; caution must be taken in generalizing the findings. A multi-center study that would make use of both quantitative and qualitative techniques is therefore suggested in further research.

Conclusion

This study revealed that health insurance uptake among hypertensive patients was low (26.8%), with resultant financial difficulty in payment for drugs and investigations, despite the fact that majority of the patients without insurance cover had good disposition and were ready to enroll. Health insurance was identified to promote affordability of care of hypertension among these individuals. It is therefore recommended that health insurance should be stepped up as the major form of healthcare financing for these group of people. The current uptake of health insurance among these patients needs to be scaled up to in order to achieve the universal health coverage.

Conflict of Interest

The authors have no conflict of interest to declare.

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The Impact of Personality and Situational Factors on Perceived Stress: An Investigation During COVID-19 Pandemic

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Abstract
The study investigates the relationship between personality and situational factors on perceived stress level during the global COVID-19 pandemic. Analysis of data collected from people across different territories confirms the association between personality traits and perceived stress level. Furthermore, the paper shows that people are experiencing moderate stress, which is affected by where they are residing, whether their personal finance is at risk, and their usage of social media during the pandemic.

Keywords: Personality, Perceived Stress, Situational Factors, Cross-Country Comparison

Introduction

At the end of 2019, beginning of 2020, the Coronavirus COVID – 19 took the world for a storm as it quickly spread out to most nations within only a few months, and was declared a global pandemic, with nearly 8 millions infected and nearly half a million dead (and counting) (worldometers, 2020). Many nations declared quarantine orders, cancel large gatherings, and even close off borders in an attempt to slow the virus spread. Starting as a health crisis, it rapidly escalated to creating negative social, economic and political impacts. People's lives are disrupted when schools are closed, adults work at home, businesses recorded huge losses and even bankruptcy, many lose their jobs and are left hungry and homeless. With such challenging conditions, it is predictable that people would experience emotional distress, especially when many nations place a compulsory social distancing and quarantine that bounds people at home. This study aims to investigate mental health during the Covid-19 by examining stress levels of people in different countries and the relationship between personality and stress.

Literature Review

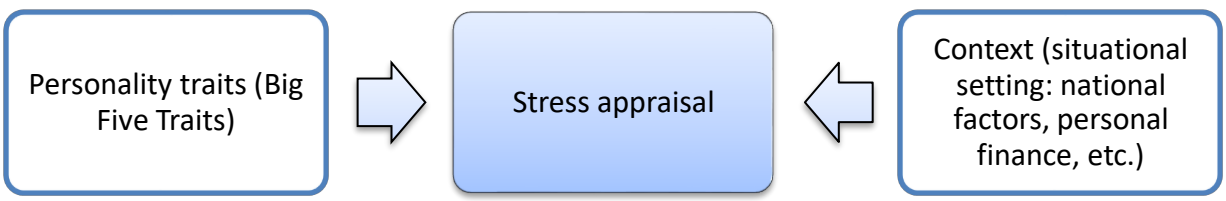
Lazarus (1990) viewed stress response as the result of the interaction between humans and environment, which means that individuals would differ in their perception of stress. In the transactional model of stress developed by Lazarus & Folkman (1984), individuals experience two appraisal processes, one to evaluate the external

stressors and personal stake and the other evaluates personal resources to cope with stressors; stress occurs when imbalance between stressors' demands and personal resources to cope with such demands. When judging a situation to perceive threats, individuals differ in terms of perception and cognitive appraisal, which leads to varied interpretation of situations. People differ in terms of personal resources to cope with external threats, which means how they react to perceived threats is not the same as well.

Even though personality was not specifically included in the transactional model of stress, it clearly impacts individuals' cognitive appraisal processes. Trait theory views personality traits as patterns of thoughts and action, and there are characteristics that are stable and consistent across situations (Costa & McCrae, 1992). However, there are studies that proved personality traits can fluctuate and be changed and even in a short time frame (see for example, Wilson et al., 2016; Wrzus & Roberts, 2017; Sherman et al., 2015). Whatever the case it is, the relationship between perceived stress and personality has been widely accepted as previous research has proved the relationship between personality and subjective perception of stress. Vollrath (2001) believed that personality affect the descriptive representation of situation and evaluative perception of situation. Cross-sectional and longitudinal studies showed a significant association between personality and perceived stress (Ebstrup et al., 2011). Shields et al. (2016) discovered that change in perceived stress is strongly related to change in pessimism on a weekly basis. Kondratyuk & Morosanova (2014) found out that high level of neuroticism and introversion can lead to high chronic stress. Şahinn & Çetin(2017) conducted a weekly assessment study and confirmed that neuroticism and extraversion predict perceived stress. The cross-sectional population-based research by Feizi et al. (2014) proved that people with high neuroticism tend to have high level of stress and anxiety, and those with high extraversion and consciousness have lower the chance of high psychological stress. Borkoles et al. (2018) linked Type D personality to increased level of perceived stress and discovered that people with Type D personality tend to search the environment for threats.

As defined, stress response is the interaction of environment and individuals, debate on the role of environmental factors and personal factors on perceived has attracted attention. The study by Luo et al., (2017) found that genetic factors largely explained for the concurrent relation and the continuity between the two; meanwhile, environmental factors played a more significant role in the association between changes in personality and in perceived stress. Similarly, the research on students by Schmidt et al. (2013) showed that structural conditions explained perceived stress better than personality. Lebois et al. (2016) proposed that situations of certain features (such as containing self-threat, negative affect, certainty elements, etc.) can predict the level of stress that people perceive. For example, the work by Onah (2003) about pregnant Nigerian women's perception of environmental stressors confirmed that economic, futuristic, health and social factors caused an increase in stress. Or the research by Kallio et al. (2020) found that people can be more stressed out by the poor quality of the environment. Knight et al. (2013) demonstrated that contract-related factors (such as having contracts or not, working hours) influence stress level of coaches in Canada. Similarly, the examination on teamwork by Guznov et al. (2010) found an association between high neuroticism and higher stress and workload for individuals in the position of having direct control but not in other positions, which suggests the effect of external environmental demands (social interactions required in a team role).

In this study, it is proposed that perceived stress is influenced by personality traits and context but it does not attempt to identify nor compare the magnitude of such impact.



Methodology

Procedure

A survey questionnaire was administered and distributed online on randomly selected Facebook groups that have members living in Vietnam and foreign countries. The questionnaire was open for three weeks, from mid April to the beginning of May, when the virus started to spread uncontrollably, the number of infected cases skyrocketed worldwide, chaos and system overload happened, many countries h declared national lock-downs. After three weeks, a total of 219 responses were collected on Google Form, 3 were not valid, leaving only 216 eligible responses. The survey comprises three sections: the first one asks about personal information and personal circumstances during Covid-19 pandemic, the second section and the third section measure personality and perceived stress scale respectively.

Instruments

Personality is measured on five domains, using a 30-item short form questionnaire tested and refined by Soto & John (2017). The questionnaire is developed based on the Big Five Model, one of the most popular frameworks (McCrae & Costa, 1999); many have praised the model in examining stable personality traits in threatening situations (see Besser & Shackelford, 2007; Hojat et al., 2003). The Big Five Model examined five personality traits: Extroversion, Agreeableness, Neuroticism, Conscientiousness, and open-mindedness. In this study, the term "Neuroticism" is replaced by the term "Negative Emotionality" to be consistent with the original questionnaire by Soto and John. The level (high or low) of each trait is calculated by adding up the scores of the questions that measure the trait.

To measure stress, the Perceived Stress Scale (PSS) developed by Sheldon Cohen and his colleagues (1983) was used. It is one of the most popular psychological instruments used to measure individuals' perceived stress. The PSS is a self-reported scale that asks about individuals' experience of perceived stress in the last 30 days. Among the three versions of the scale: PSS-14, PSS-10, and PSS-4, the 10-item version was selected to use in this study. There are 10 questions on the scale, each asks the interviewee to chose the option that best describes their frequency of experiencing the stressful situations. The original scale was 0 – Never, 1 – Almost Never, 2 – Sometimes, 3 – Fairly Often, 4 – Very Often. The scale used in this study kept the same 5 levels of frequency, but changes the numbering of each option as followed: 1 – Never, 2 – Almost Never, 3 – Sometimes, 4 – Fairly Often, 5 – Very Often. Score for each question is added up to calculate the level of perceived stress; scores ranging from 0-13 are considered as low stress, 14-26 is considered as moderate stress, 27-40 is considered as high stress.

Data

The research sample consisted of 216 people living in 21 countries affected by Covid -19 pandemic. Specifically, 44% of the respondents are living in Vietnam, 39% are living in European countries, and the rest are residing in other nations (see Table 1). Around 90% of the respondents are living in quarantined areas (see Table 2), more than 80% of them believe that quarantine helps to prevent the spread of the virus (see Table 3). 60% of the respondents are female (131 people), around 39% are male (85 people), and only 1% identified themselves as others (2 people). Nearly half of the participants (48%) are from age 25 to 34, 29% are from age 35 to 49, around 10% are from 18 to 24 and over 50, only a minority are under 18. In terms of employment status, half of the respondents are full-time employed, 6% are part-time employed, 17% are self-employed, 19% are students (including those on scholarship), and the rest are other types of employment (such as housewives, unemployed, etc.).

Table 1: Population of respondents by Residing country

Residing_country

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Vietnam	95	44.0	44.0	44.0
	Europe	87	40.3	40.3	84.3
	Others	34	15.7	15.7	100.0
	Total	216	100.0	100.0	

Table 2: Population of respondents by Quarantined area

Living_in_quarantined_area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	194	89.8	89.8	89.8
	No	20	9.3	9.3	99.1
	Others	2	.9	.9	100.0
	Total	216	100.0	100.0	

Table 3: Population of respondents believing in the effectiveness of quarantine

Believe_in_quarantine

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	176	81.5	81.5	81.5
	No	26	12.0	12.0	93.5
	Others	14	6.5	6.5	100.0
	Total	216	100.0	100.0	

Results

Perceived stress level and Personality

The relationship between personality and perceived stress is determined by Pearson Correlation. The results showed a relationship between personality and perceived stress level.

To be more specific, in Table 4, with $r = 0.417$, $p < 0.01$, Negative Emotionality was proved to have a positive moderate relationship with perceived stress level. This could be understood as the higher level of negative emotionality is, the higher the stress level is.

Table 4: Correlation between Negative Emotionality Personality and Perceived Stress Scale

Correlations

		Perceived. Stress	Negative Emotionality
Perceived. Stress	Pearson Correlation	1	.417**
	Sig. (2-tailed)		.000
	N	216	216
Negative Emotionality	Pearson Correlation	.417**	1
	Sig. (2-tailed)	.000	
	N	216	216

**. Correlation is significant at the 0.01 level (2-tailed).

In Table 5, with r = -0.184, p = 0.007 < 0.01, it can be concluded that there is a weak negative relationship between Conscientiousness and perceived stress level, which means the lower level of conscientiousness a person has, the higher level of stress he/she perceives.

Table 5: Correlation between Conscientiousness personality and Perceived Stress Scale

Correlations

		Perceived. Stress	Conscientiousness
Perceived .Stress	Pearson Correlation	1	-.184**
	Sig. (2-tailed)		.007
	N	216	216
Conscientiousness	Pearson Correlation	-.184**	1
	Sig. (2-tailed)	.007	
	N	216	216

**. Correlation is significant at the 0.01 level (2-tailed).

The ANOVA test was run to investigate whether different groups recorded different personality. With Sig. = 0.001 < 0.05 and Sig. = 0.043 < 5, the result showed that different age groups vary in Negative Emotionality and Conscientiousness respectively. There are no differences in personality by Gender and Nationality.

Then, means of the groups were compared to further investigate the differences in personality.

Table 6 shows that the older people are, the lower level of negative emotionality they experience.

Table 6: Negative Emotionality by Age

Report

NegativeEmotionality

Age	Mean	N	Std. Deviation
Under 18	2.0000	2	2.82843
18 to 24	.4783	23	5.15989
25 to 34	-1.1524	105	5.02643
35 to 49	-1.7656	64	5.01661
Over 50	-5.5909	22	4.69710
Total	-1.5833	216	5.17979

Table 7 demonstrates that people in the age group from 35 to 49 have the highest level of conscientiousness.

Table 7: Conscientiousness by Age

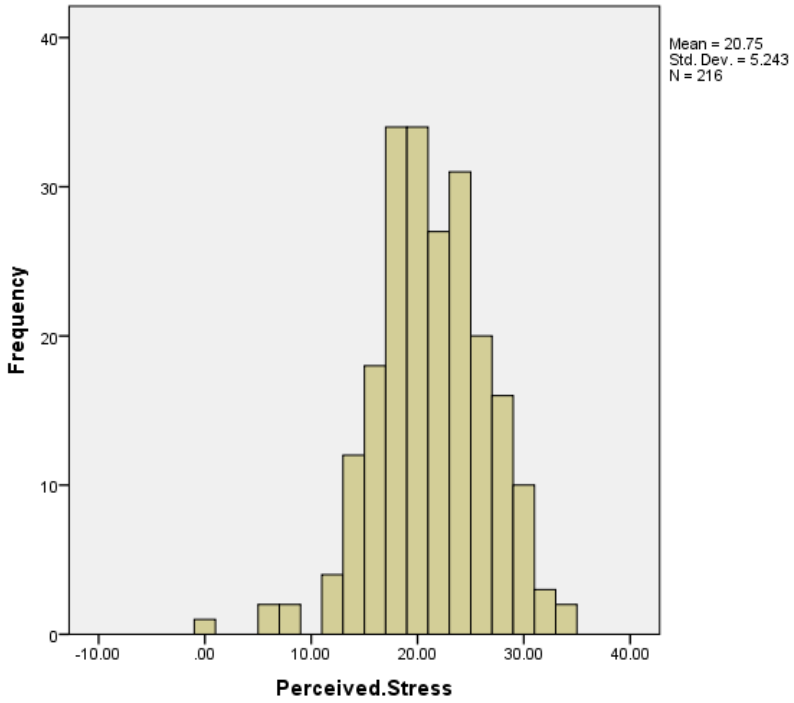
Report

Conscientiousness

Age	Mean	N	Std. Deviation
Under 18	2.0000	2	2.82843
18 to 24	1.1304	23	3.59677
25 to 34	2.6952	105	4.14433
35 to 49	4.1719	64	4.38089
Over 50	3.2727	22	5.02548
Total	3.0185	216	4.31327

Stress level during Covid-19 period

Data were collected using a random sampling method from 216 participants across different countries. The result showed that the majority of respondents perceived moderate level of stress during the Covid-19 period (M = 20.75, S.D = 5.243)



Graph 1: Stress level during Covid-19 pandemic

The result in Table 8 is Sig. = 0.037 < 0.05, which proves that there is a difference in stress level among people who have different usage of social media during the quarantine period.

Table 8: Perceived Stress and Daily usage of social media

ANOVA

Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25.188	23	1.095	1.650	.037
Within Groups	127.437	192	.664		
Total	152.625	215			

In Table 9, Sig = 0.031 < 0.05 means that people having personal finance affected by the Covid-19 pandemic experienced different stress levels.

Table 9: Perceived Stress and Personal finance

ANOVA

Perceived.Stress

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	127.313	1	127.313	4.711	.031
Within Groups	5783.187	214	27.024		
Total	5910.500	215			

Table 10 with Sig= 0.018 < 0.05 shows a difference in stress level of people living in different countries.

Table 10: Perceived Stress and Residing countries

ANOVA

Perceived.Stress

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	219.844	2	109.922	4.114	.018
Within Groups	5690.656	213	26.717		
Total	5910.500	215			

Then, means of groups are compared to look more specifically into the differences in stress levels. Table 11 shows that people living in Vietnam experienced less stress than those from Europe.

Table 11: Perceived Stress in different destinations

Report

Perceived.Stress

Residing_country	Mean	N	Std. Deviation
Vietnam	20.1684	95	5.41993
Europe	21.9310	87	4.90323
Others	19.3529	34	5.11019
Total	20.7500	216	5.24316

Not surprisingly, the result in Table 12 demonstrates that people whose finance is negatively affected by the pandemic experienced higher stress compared to those whose finance is stable.

Table 12: Perceived Stress of people having finance affected

Report

Perceived.Stress

Personal_finance_affected	Mean	N	Std. Deviation
Finance affected	21.4113	124	4.97639
Not affected	19.8587	92	5.48441
Total	20.7500	216	5.24316

Interestingly, based on Table 13, it seems that the more hours that people spend on social media, the higher level of stress they experience.

Table 13: Perceived Stress by the level of social media usage

Report

Perceived.Stress

Daily_usage_of_social_media	Mean	N	Std. Deviation
Less than 2 hours	18.8600	50	5.15479
2 - 4 hours	20.7778	99	5.12209
Over 5 hours	22.1194	67	5.12428
Total	20.7500	216	5.24316

Discussion

This study is the first one to examine people's stress in different countries during Covid-19. The research aims to investigate the relationship between stress level and personality and how contexts may affect people's stress.

The first finding confirmed the relationship between personality traits and perceived stress level. Analysis of data showed that perceived stress is positively related to negative emotionality (or neuroticism), and negatively related to conscientiousness. This result of negative emotionality and perceived stress is in line with previous

research by many authors, such as the ones by Fornés-Vives, et al. (2012), Dalia, Lucia & Nathalie (2017), or Conard & Matthews (2008). Individuals with high scores of negative emotionality have more difficulties in controlling emotion and are more likely to experience negative emotions; therefore, it is logical that they tend to have higher level of stress than those that have low negative emotionality. On the other hands, trait of conscientiousness is found to have a negative relationship with perceived stress, which means that the more conscientious a person is, the lower level of stress he perceives. This outcome concurs with existing literature, such as the study by Luo & Roberts (2015) who stated that people who increased in conscientiousness experienced less stress over time. Because conscientiousness is related to positive thinking and positive reappraisals (Watson & Hubbard, 1996), it is comprehensible that high level of conscientiousness is associated with low level of stress.

The second finding illustrated the impact of situational factors on stress level. National and global contexts have been proved to influence people's experience of stress. For example, Ragnarsdóttir, Bernburg, & Ólafsdóttir (2013) hypothesized and inspected different outcomes (caused by the global financial crisis) that affect emotional distress and found out that Icelandic people's comparison of past outcomes (to the present) has the most significant impact on their distress. On a similar note, the research by Abu-Ras, Suárez, & Abu-Bader (2018) during the 2016 presidential election in America (where one potential candidate frequently underlined his intention to restrict immigrants from entering the country) discovered that people of certain ethnicities suffer from discrimination stress, which makes them more likely to have higher rate of mental health problems than those who are not discriminated.

The analysis showed that people residing in Vietnam seemed to have less stress compared to those living in Europe during Covid-19. This could be explained by the country's successful containment of the virus compared to others (Quach & Hoang, 2020; Dinh et al., 2020, Huynh, 2020; Ha et al., 2020), which make their citizens feel more secured than those living in nations where the number of infected and death toll is much higher.

Furthermore, people whose finance is negatively affected by the Covid-19 perceive higher stress than those whose finance is stable. The Covid-19 has severely disrupted businesses worldwide, causing many people to either lose parts of their regular incomes, or become unemployed. This finding corresponds to the study on families by Wei & Chen (2014) who confirmed that financial stress is significantly related to mental health problems. Sweet et al. (2013) also discovered that high financial debt is associated with higher perceived stress and depression in the US. Similarly, Faresjö (2013) compared the stress level between Greek and Swedish young adults and found out that the Greek had higher perceived stress as a result of living in deteriorating national economic conditions.

Additionally, the result showed that people who use social media more frequently records higher perceived stress. The finding seems contradictory to the study by Bland et al. (2012) who claimed that people used internet social networks as a way to reduce stress. The need to stay connected is perhaps even more imperative during the turbulent time, especially when the majority of respondents lived in quarantined areas at the time this study was conducted. Higher stress from using social media can be explained as even though social networks established through social media is a means of having connectedness and perceived support, such support is superficial, and thus, the more people are connected, the more lonely they can get (Ventriglio & Bhugra, 2017). Besides, people can be stressed out by receiving negative information about the virus daily, especially when social media is used as a channel for the government to communicate with the public concerning health issues (see Coiera, 2013; Neiger et al., 2012, or Mehta & Atreja, 2015). Because in addition to the primary use of social media for keeping in touch with friends and families or for entertainment purpose during the quarantined period, people also rely on this channel for updating and sharing information related to the pandemic. In the case of Vietnam, the government integrated this channel into other initiatives to combat Covid-19, where citizens are regularly updated on the situation and are encouraged to stay connected for timely information. Social media proves to be effective in propaganda; therefore, agenda should be developed to maximize the benefits of this channel (such as connecting people and sharing information) in the time of terror and panic.

Limitations

The study was not conducted without limitation. First of all, small size of sample may affect the precision of findings. Secondly, the research was conducted at a specific time during the global health crisis, which can only describe the fact at that moment and cannot generate a clear understanding of the impact of situation on stress. In the future, perhaps a larger sample size and a longitudinal study at different times of the pandemic may better explain the effect of situational factors on perceived stress.

Conclusion

The research is conducted cross-country during a severe global pandemic to investigate the impact of personality and situational factors on perceived stress level. Analysis of data confirms the association between personality traits of negative emotionality and conscientiousness and perceived stress, which is consistent with existing literature. The study also shows that people experience moderate stress during the global Covid-19 epidemic and that perceived stress is affected by situational factors including residing country, personal finance, and usage of social media. Future research could inspect stress level through different times of a situation to provide a more comprehensive understanding of how context influences stress.

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The Role of Personal, Social and Religious Resources in Caregiving Stress

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Abstract
This study puts personal, social, and religious resources as a stress buffer for caregivers. The limitation of personal, social, religious resources have a detrimental effect on the mental health of caregivers of a family member with schizophrenia (hereinafter referred to as People with Schizophrenia, or PwS). Following the caregiving stress process theory, this study aims to clarify not only the role of personal and social resources but also the religious ones. For this purpose, in-depth interviews with a life history method were done to twenty (20) caregivers of PwS. The result shows that personal resources like coping mechanism management (for example, by doing a positive comparison with others and reducing the expectations on the PwS) would help to perceive the role of a caregiver more positively. Meanwhile, social resources like social support were received by the caregivers from their significant others (family members) and similar others (support group). Social support was received in the form of emotional support, caregiving help, and instrumental aid. Religious resources in the form of religious coping were also used as a buffer for the stress that came from caregiving. This was done by positive religious coping, such as asking for help from God during difficult times, involving God in everything they do, and surrendering themselves to God to get the strength to face life problems. These three resources (personal, social, religious) were needed by the caregivers so they can preserve their mental health.

Keywords: Caregiver Stress, Personal Resources, Social Resources, Religious Resources

1. Introduction

In Indonesia, the services available for mental health still have many issues. According to *Rencana Aksi Kegiatan* (Action Plan) of 2015-2019 of the Ministry of Health of Indonesia, only 33% of the general hospitals in Indonesia provide mental health services and eight provinces don't have any psychiatric hospitals. Only 21.47% of the primary health care provide mental health services. Also, the gap of mental health treatment reaches up to 90%, which means only 10% of the people with severe mental health disorders can be treated in Indonesia.

The scarcity of accessible mental health services for the general public gives rise to numbers of informal caregivers that are forced to take care of PwS (Keith, 1995). This positions informal caregivers as main caregivers who have to take on required new duties and roles regarding the caregiving of PwS, and it is often this leads to unexpected caregiving careers (Aneshensel, et al, 1995). In doing this purpose, there are spectacles and burden that these caregivers have to face, be it objective burden (which includes negative impact faced by the family, such as the expensive caregiving expense, or the fulfillment of the PwS' daily needs) and subjective one (which includes being depressed, lost, or anxious). This might lead to a stressful condition that would influence the caregiver's mental health (shown by the symptoms of depression and anxiety) (Jusuf, 2006).

This imbalanced mental health condition is created socially and is defined by social forces (Thoits, 2006). According to the framework presented by Pearlin et al. (1990), the condition of the imbalanced distribution of mental health issues can be understood via the exposure of stress, the absence of social and personal resources, and its social context (in this case, it is related to the social and economical characteristic, past experience in caregiving, and the composition of the family and its social network, and the availability of the program).

All the studies about the stress process can be divided into three categories. The first one focuses on the stressor and a certain structural context that produces the stress process (Wheaton, 2013; Aneshensel et al. 1991, Aneshensel et al., 1995; Aneshensel, 1996). Second, it focuses on how coping mechanisms and social resources can buffer for the stressors so they give a different impact on mental health (Lin & Ensel, 1989; Wheaton, 1985, Thoits, 2006). The third group focuses on the impact of social structure and stress on different mental health outcomes (Aneshensel et al., 1991). This study belongs to the second group that talks more about coping mechanisms and social resources as a stress buffer due to caregiving. However, in the Indonesian context, the coping mechanism and social support that is used as a stress management resource based on the stress process theory presented by Pearlin et al. (1990) are not enough to explain its effect on the outcome of a caregiver's mental health. The use of a religious coping mechanism which, in this case, comes from religious activities and beliefs will also be taken as a coping mechanism that is influential to the outcome of a caregiver's mental health (Schieman, et al., 2013).

Therefore, this study aims to investigate how caregivers manage the stress due to caregiving using their personal, social, and religious resources.

1.1. Caregiving Stress and Coping Resources

According to the caregiver stress process presented by Pearlin et al. (1990), coping strategy resources consist of personal resources (in the form of individual coping) and social resources (in the form of social support). Solomon and Draine (1995) did a study on 225 family members that joined a psychoeducation program. This study found that 39% of the subjective burden that a caregiver got could be explained by looking at the stressor severity, which was related to the illness of the family member and the available social support, and the caregiver's coping capabilities. According to Lazarus and Folkman (1984), an individual coping mechanism is defined as *"... the process through which the individual manages the demands of the person-environment relationship that are appraised as stressful and the emotions they generate"*. Streid et al. (2014) analyze the caregivers' burden in African Sub-Sahara. This study identified the primary stressor that caregivers experience regarding the daily caregiving treatment of the patient and their emotional support. Secondary stressors that are identified in this study are financial hardship, familial responsibility, and social isolation. This study shows that the social, relational, spiritual, and psychological resources that the caregivers have will reduce the impact that the stressor gives. This study shows that empowerment of a resource will empower other resources, but failing to utilize one of the resources will suppress other resources and eventually make the caregiver's burden worse.

The explanation that focuses on the stressor and the resources used in stress analysis and their relationship with health shows that stress and its resource component from a psychological background directly govern the symptom of physical diseases (Lin & Ensel, 1989). However, the social resources, in this care social support, have a bigger influence because they can support social stress (negative live events) and psychological stress (depression, anxiety, etc.). Meanwhile, psychological resources are limited to being a buffer for psychological

stress. An important note from this study is how social resources buffer social and psychological stress and its impact on physical well-being. This aligns with a study of Thoits (2011) that analyzed social support as a stress buffer resource. Thoits (2011) also explained that the social support that the caregivers get may also come in the form of instrumental support, especially if it comes from people who are significant to the caregivers and people with similar situations. Meanwhile, Wheaton (1985) explains the interaction between stress and social support that stress effect will decrease significantly at higher amounts of social support.

Besides social resources that manifested in the form of social support, another missing part in the stress process that Pearlin et al. (1990) presented is the role of religious resources that comes in the form of religious coping. Pargament et al. (2011) mentioned that the studies that employed religious coping in the context of the United States showed that those who weren't white have a better score in the term of positive religious coping against stress. There are only a few studies that employ religious coping in a non-Western context. In the Indonesian context, this concept becomes important because Indonesia has a different character from western countries in terms of religiosity. Koenig (2005) explained in his book a result of a study that connected religion or belief with mental health. Religion is taken as a resource to manage mental health.

1.2. Personal Resources

According to the caregiving stress process by Pearlin et al. (1990), personal resources are visible in the form of individual coping mechanisms -- for example, situation and meaning management. Managing the situation includes things that caregivers need to do to ease their caregiving duty, like being firm in directing the behavior of PwS, doing all the required stuff and being more relaxed on other things, trying to find ways to keep PwS busy, and trying to learn more about schizophrenia (for example, by reading books, asking a medical doctor, or going to a public talk that discusses it). Meanwhile, managing the meaning is about the caregivers' opinion about caregiving -- for example, reducing their expectations, making a positive comparison, constructing a more positive understanding about schizophrenia.

1.3. Social Resources

In the framework presented by Pearlin et al. (1990), there are two forms of social support that he described, namely instrumental support and expressive support. Instrumental support is visible from the presence of another person who helps the caregiver in taking care of the PwS and doing the daily house chores. Meanwhile, expressive support is seen by how much the people around the caregivers care about them, or if the caregivers have people that they can trust (at least a friend or a relative that they can talk to when they get sad or hopeless, etc.). Even though, in this study, monetary support in the form of caregiving cost support is also an important aspect.

1.4. Religious Resources

According to Pargament et al. (2011), religious coping, which comes in the form of positive religious coping, shows how caregivers look for a strong relationship with God to face difficult situations. The forms of religious coping, which includes: (a) collaborative coping by involving God to fix life problems, (b) reframing negative life condition with religious lens -- for example, by seeing life problems as God's plan; (c) looking for spiritual and comfort from God, (d) trying to solve manageable problems on their own, and asking help from God for harder problems. Religious coping also can buffer the effect of stress on caregiver's mental health (Ellison and Henderson, 2011).

2. Method

2.1 Qualitative Method

The qualitative method was used in this study to contextualize stress process theory for PwS' caregivers in Indonesia. This theory was developed by Pearlin et al. (1990), created and constructed in the context of Western

communities in the United States. Similar studies that used this theory were more commonly undertaken in Western countries. This study complemented those studies by including religious resources as coping resources.

The qualitative method used in this study was life history. Life history was used to deliver a deeper picture of the stress process happening to caregivers of PwS. Schizophrenia was one of the mental health disorders that required long-term care. We could get a complete picture of how the stressor emerged and how the caregivers coped with it -- from the illness's emergence to the start of the caregiving process to today. The caregivers' social contexts influenced the kind of stressor turned up and the resources that could be used to reduce the stressor's influence on the caregivers' mental health. Through this method, the interviews explored the caregivers' life events chronologically (Neuman, 2014). The retrospective method was used; the informants were asked to recall the events and experiences related to their status and role as caregivers, starting from the emergence of PwS' illness until the time the interviews were done. Information regarding the personal, social, and religious resources that the caregivers had were also explored, as they helped the caregivers to overcome the stress due to caregiving.

2.2 Participants Characteristics

The characteristics of the selected informants included that they were main caregivers and they were already eighteen years old and they had been taking care of a PwS for at least six months. Eighteen was chosen as the minimum age because at this age people had acquired more sophisticated roles in their social lives. The selection also considered these aspects: if the informant was a member of *Komunitas Peduli Skizofrenia Indonesia* (KPSI/Indonesian Care Group for People with Schizophrenia), their caregiving history, their caregiving type (if they were the parent, the child, or sibling, or the partner of the patient), gender, marital status, religion, and working status.

Table 1: Participants Characteristics (N=20)

Characteristics	**N**	**%**
Caregiver Type		
Parents	10	50
Child	2	10
Siblings	5	25
Spouse	3	15
Religion		
Islamic	14	70
Christian	3	15
Chatolic	3	15
Sex		
Male	5	25
Female	15	75
Caregiving History		
<1 year	1	5
1-2 year	2	10
3-5 year	1	5
>5 year	16	80
Educational Level		
None/Not Completed in Primary	2	10
School	1	5
Middle School	6	30
High School	10	50
Diploma/Bachelor Degree	1	5
Postgraduate		
Working Status		
Not working	8	40

Characteristics	N	%
Working part time	6	30
Working full time	6	30
Status Perkawinan		
Single	1	5
Widowed	4	20
Divorced	1	5
Married	14	70

2.3 Data Collection

In-depth interviews and observations of the caregivers were done from 30 August to 24 October 2018. The researcher used gatekeepers that could connect the researcher with the caregiver of PwS. The gatekeepers were the founders and volunteers in KPSI. In the beginning, the caregiver type was not considered as one of the selection criteria, but in the data collection process, the caregiver type showed a distinctive pattern in the stress process of this study. Therefore, four caregiver types were selected based on the status and role the caregiver had in a family, such as a parent, child, sibling, and spouse. Finding a child and spouse caregiver was quite hard because a parent PwS was harder to find in this community, when we can find an older member with this condition they remain unmarried. Meanwhile, the spouse caregiver was also harder to find because many people quit the relationship when their partner suffered schizophrenia. Most of these spouse gave the caregiving roles to the PwS' family.

The data collection process in the form of an in-depth interview was done one to two times for every informant -- with the duration of each interview one to three hours. The interviewing process started with an introduction and after that, the researcher tried building rapport with the caregivers. After things became conducive, the researcher asked the caregiver's consent to be interviewed and explained about the informed consent for the involvement in this study. The informed consent contained an explanation about the study, the purpose of the study, the procedure (including the use of an audio recorder), the risk of participation, the benefit of participation, and the souvenir that would be given as compensation for the time spent for the interview. It also informed about the resignation process if the caregiver ended up refusing to participate, data confidentiality, and the researcher's phone number. At the end of the informed consent, there was a statement letter that the informants and the researcher had to read and sign together. The in-depth interviews used the semi-structured interview guideline because this study followed the stress process framework presented by Pearlin et al. (1990). The interviews were done mostly in the informants' homes. Some informants asked the interviews to be done in public spaces, like restaurants, KPSI's headquarter, or the caregivers' workplace.

2.4. Data Analysis

The qualitative data was processed by the software NVivo 12. The qualitative data processing and analysis in this study can be divided into five phases: *First*, the recording of the interviews had to be transcribed, verbatim; *second*, the transcription was converted into code based on the indicators developed from the stress process framework by Pearlin et al. (1990) and other codes found during the interviews; *third*, the transcription that had been converted to codes were processed by the NVivo program based on the caregiver type; *fourth*, the result of the coding process was issued in the form of (1) quotes of the answers of the informants based on the caregivers' stress process indicators by Pearlin et al. (1990) and the caregiver type, (2) creating a classification sheet that showed caregivers' profile based on their characteristics and social contexts; *fifth*, analyzing the result of the coding process, which would show the pattern of coding resources in each caregiver type.

3. Results

3.1 The Role of Personal Resources

In the stress process theory presented by Pearlin et al. (1990), the coping mechanism that parents do to overcome the problems faced by PwS has several functions, such as managing the situations that might lead to stress, managing the meaning in every problem faced by PwS so the risk of stress would be reduced. The parents' individual coping mechanism was often done with managing the meaning, for example by making positive comparisons with other people about their caregiving experience. This showed that the caregiver is doing a self-reflection about the condition that they have and comparing it with others. Meanwhile, lowering the expectations held against PwS would also help the caregiver to overcome the effect of caregiving. Society set life goals that someone had to achieve and demanded everyone to pursue them. PwS' conditions, which often had structural barriers, should give the caregivers the idea to refuse to fulfill the demand from the society that there should be more roles for PwS in the society, namely working and getting married. This gives a new meaning for the caregivers regarding the demand of the society towards PwS. As stated by one of the caregivers:

> "Yup, grateful.. Take me as an example, beside me, many sold their houses, many got divorced, fight.. We are among the lucky ones. My children still visit us.. So not so many problems." (Interview with Bapak N, Father, 77 years old, October 5th 2018)

Child caregivers carry out a coping mechanism by getting married to expand their role identities. Additional roles provide additional energy and commitment in caregiving because the burden can be shared with new family members (Thoits, 2003). Another treatment carried out by the child caregiver is by making positive comparisons and seeing the good things in PwS (caregivers had to see PwS's past as a reference for current actions). The new meaning given to the role of caregivers, be it in relation to the caregiver's evaluation of their external environment or to PwS, would reduce the effect of caregiving. As explained by one of the following child caregivers:

> "So I think, it's better for me to get married, let's say I will get more help, my partner, so it won't be just me to bear all these burdens. I can share it with my wife, well, at least, even when I am deserted, I will have a friend, my wife. Life must go on. I have to think of my own life too. Not that I am disobedient, but this needs to be shared." (Interview with A, Son, 31 years old, October 3rd 2018)

Meanwhile, the sibling caregivers take care by being firm in directing PwS behavior and learning a lot about how to deal with PwS from the beginning of the care until now. They overcome the life difficulties resulting from caregiving by joining in community activities (Thoits, 2006). Coping is also done by redefining the caregiving actions by focusing on things that the caregivers admire from PwS, focusing on the positive things, and choosing not to see negative things about PwS. In addition, a more positive understanding of the desease generated a new meaning of the illness, which provides strength for the caregivers to continue their role. This is as stated by one of the sibling caregivers:

> "So I have come to the "what can I say, this is my life" phase. All people have their own problems, so this might be my family's problems. About how to cope, this and that, just follow the flow. Being told to take care, I took care; so I have come to the phase that I never think "what would happen to him if..."; no. Just see what happens tomorrow. So, for anything that happens, there will be solutions, just like that." (Interview with N, Sister, 48 years old, September 10th 2018)

Spouse caregivers have a higher sense of agency because before they got married with PwS, they used all their personal resources to study PwS' illness and eventually accepted the role of caregiving when they finally got married. Life difficulties that came from the caregiving activities are compensated by carrying out other activities, especially in their work and involvement in the social activities. Transformative coping was also carried out by involving themselves in education and advocacy on mental health in numerous institutions. Meaning management was shown from the cultural scheme of caregiving, the meaning of marriage for them, and their consistency of life choices. Caregiving wasn't seen as a burden but a struggle that the caregiver and PwS must face together. The life choices the caregiver took showed the caregiver's ability to do care (Hitlin and Elder, 2007) and the caregiver's ability to solve problems (Thoits, 2006).

> "... But when he was like that (showing a behavior of self-withdrawing), I looked through books again, oh it's part of his illness. Isn't it like that. So I started to understand him, to understand his illness." (Interview with U, Wife, 50 years old, September 7th 2018)

3.2 The Role of Social Resources

Social support gives an explanation of how the caregivers would try to use their support network to help them deal with the difficult situations during caregiving. Expressive social action can be seen in the type of support that the caregiver got, which was in the form of emotional assistance for the caregiver. Meanwhile, instrumental social action is reflected in the type of support the caregivers got, which was in the form of caregiving help for the caregiver and instrumental assistance. Parent caregivers get more sources of support from their closest people -- not only family members (children, siblings, spouses), but also work friends, neighbors, college friends, and doctors. Emotional support was given in the form of attention, care, sympathy, love, and mutual sharing. Meanwhile, caregiving help was provided in the form of helping with medical expenses, caregiving costs, providing food when PwS experienced a relapse, lending a vehicle, and helping solve problems (for example, suggesting alternative treatments). In addition to support from significant others, parent caregivers also get support from similar others in the form of participating in community activities, namely the Indonesian Schizophrenia Care Group Community (KPSI). KPSI supported caregivers by providing psychoeducation/information, advice, and direction on how to deal with PwS. Fellow community members provide emotional support to each other by empathizing and validating their feelings and concerns about the caregiving experience.

> "There are friends from the office, friends from college, incidentally they also have nephews who got sick because of drugs. And then we shared. Well, in the end, just got closer to Allah. Thank God that I have my college friends with me until now, almost like relatives. So when I lack financially, they will help.. Did it that far." (Interview with Ibu S, Mother, October 13rd 2018)

Social support for child caregivers comes from family support networks (uncles and siblings), school friends (when the caregiver was yet to marry), and their partner (after the caregiver was married). The type of support given is emotional support -- for example, being there when the caregiver is experiencing difficulties in life and accompanying them. In addition to emotional support, child caregivers also received from their support sources assistance on how to treat PwS when they are showcasing problematic behavior (significant others are family members with educational or work backgrounds in public health). Another form is instrumental assistance -- for example, financial assistance and helping to look after PwS when they are sick.

> "Thank God, one of my uncle, the one who is from my father's older sister, he has a degree in health, a nurse. He, thank God, often told my families, and the other families, to her children or wives of my father's families, that if they relapse again, recur again, don't treat them differently, or exclude them… So, thank god, not only from my internal family, but also extended family, they are supportive. I am very grateful, I can say that. Can't imagine if I never get support from here and there." (Interview with A, Son, 31 years old, October 3rd 2018)

Sibling caregivers have a source of support from both significant others and similar others. Sources of significant others include family members (husbands, uncles, siblings), while similar others are from the chairman and members of KPSI and professionals (doctors and psychiatric nurses). The closest people provide emotional support in the form of a willingness to share, listen, accompany and be there when there are difficulties. Meanwhile, KPSI members give their support in the form of providing information, psychoeducation, direction, and advice that can strengthen caregivers in carrying out their roles.

> "So at least I visit my mother in law once every two weeks. I could be there from day to night. And there, I talk… for my character. Even though they can't give any advice, I can feel relieved. If I don't talk to them, or if I don't talk openly, it will be messed up at home. So, after I talked with my family, my husband's family, my husband, with KPSI, or even reading things on facebook, or talking on KPSI's facebook. I can feel relieved again." (Interview with A, Sister, 45 years old, September 1st 2018)

In spouse caregivers, sources of support from the closest people include family members (siblings, cousins, brother-in-law) and school friends. Meanwhile, the source of support from similar others came through KPSI. The closest people provide emotional support by being there when needed and providing treatment assistance in the form of providing instrumental assistance -- for example, paying for living expenses and medical expenses, assisting PwS when they are experiencing a relapse, and giving support to apply for a state-paid health insurance card so they can get support from the government.

> "... 500 thousand a month. At that time I also paid an installment of 500 thousand a month. I got out of my job because I didn't have anyone to babysit my kids at home. We used to have the dad to babysit, while I worked. Thank God, my older brother, the oldest, asked me monthly, "Have you paid for your house this month?" That. If I don't have enough money, he often gives me. For treatment expenses, thank God 100% of it comes from PwS' cousin." (Interview with YT, Wife, 50 years old, September 22nd 2018).

Support from KPSI is provided both in the form of emotional support and coping assistance. The meetings held by KPSI can provide emotional support because each caregiver is allowed to tell the difficulties and problems faced in their caregiving process. This hopefully leads to not only an understanding and empathy between fellow caregivers but also mutual having their feelings and concerns mutually validated. Meanwhile, the coping assistance also comes in the form of psychoeducation, advice, and direction can strengthen the caregiver in carrying out their role. However, another interesting thing is spouse caregivers are usually seen as role models in doing a successful caregiving role that inspires other caregivers to achieve similar things.

3.3 The Role of Religious Resources

In the stress process theory by Pearlin et al. (1990), religious coping is not one of the aspects that can be considered as a coping mechanism to reduce the impact of stress. Religious coping becomes important to be included in the caregiver stress process in the Indonesian context because religion is an important factor related to one's identity. The values that come from religious beliefs are often the standard of individual behavior. In the Indonesian context, the role of caregiving is closely related to religious values.

For the parent caregivers, religious coping is shown as the effort in taking medication and submitting the results to God, accepting life difficulties as a fate that one needs to be grateful for and still believing that there will be a way out of all life's problems and overcoming life's difficulties by praying. The parental caregiver's religious coping shows a positive religious coping which interprets adversity as something that can be overcome by relying on the belief in the power of God. This shows a form of collaborative coping, namely by involving God in problem solving (~~Ellison & Henderson~~ Pargament et al. 2011). Meanwhile, for child caregivers, religious handling is shown from the meaning assigned to life difficulties -- they are taken as something that must be accepted as it is the will of God, and this hopefully leads to more tranquility in living their life. As stated by caregivers:

> "... we are ordinary humans, Allah took care of us. I just try my best. Until this second, I never feel proud that I can take care of PwS. I just try to take care of a child. Try. Later, whether recovered or not, it is Allah's doing. Let it flow.." Interview with Bapak N, Father, 77 years old, October 5th 2018).

> "It's more relieving with religion if we already understand the fundamental, carry through the foundation. We will be calmer to face all of these tests. Now, if we have no religion, what can we do, we receive Allah's will. We have to be certain that this won't go in vain." (Interview with A, Son, 31 years old, October 3rd 2018).

For sibling caregivers, religious coping is shown by the interpretation that the caregiving of a PwS is a test from God and the belief that they can go through this test with help from God. In addition, religious coping is also carried out by interpreting that illness and recovery both come from God and that the existence of PwS as a blessing for the family. Meanwhile, for partner caregivers, religious coping is done by using prayer to get strength from God in order to live life, always involving God in everything they do, and surrendering to God in order to gain strength in facing life's problems.

> "Seeing it as a test, and Allah will not give a test that exceeds our tenacity and I believe that. And Allah will not lessen our fortune by giving us that test. And with positive thinking, it will become real, not a financial burden, not lessening my fortune in the slightest bit. And, it turns out that Allah gives the solution and it makes us stronger." (Interview with D, Sister, 44 years old, October 24th 2018).

4. Discussion

Thoits (2006) indicates the role of personal agency within the caregiver, which can explain how the caregiver's mental health can be maintained and improved and not damaged when stressors occur or when this stress accumulates due to long-term care for PwS. According to Sewell (1992), agency emerges from the actor's knowledge of rules, which means that actors have the ability to apply these rules in a new context -- in this case the role of caregiving. In addition, the agency also emerges from the control of actor resources, which means that actors have the capacity to reinterpret or mobilize resources with respect to their own rules. Meanwhile, according to Thoits (2003), agency emerges as personal resources increase. This increase expands the role identity that a person has throughout his life so that it is easy for him to enter and leave that identity. Agency is not only seen from a person's ability to solve problems due to structural obstacles, but they deliberately transform meaning or compensate for life's difficulties by exploring into other roles or activities (Thoits, 2006). When associated with the stress process theory by Pearlin et al. (1990), the coping mechanism carried out by the PwS caregiver consists of individual coping mechanisms in the form of situation management and meaning management. The ability of the caregiver in mobilizing individual coping resources (by reinterpreting and giving more positive meaning to the role of care) would help them in overcoming stress due to caregiving.

Social resources in the form of social support represent resources that are attached to individual support networks. Instrumental social action broadly divides social resources through weak ties, but expressive social action maintains personal resources through strong ties (Lin and Dean, 1984). This is in line with what Thoits said (1995) that social support is a function performed for individuals by their significant others (family members, friends, coworkers). This social support cannot be separated from the support network, which shows the level of social isolation/integration and their social embeddedness. The support structure depends on the number of relationships or social roles a person has in a particular social bond, or the frequency of contact with various network members, or the depth of relationships among network members. Furthermore, Thoits (2011) stated that social support as a stress buffer depends on the source and type of support available. Sources of support consist of significant others (namely members of the primary group who have no experience related to the stressors faced by the caregiver). Meanwhile, other sources of support are people who have similar experiences (namely members of the secondary group who have previous experiences with PwS care). Both significant others and similar others provide types of support in the form of emotional assistance and active coping assistance. Emotional support from the significant others comes in the form of love, care, attention, giving sympathy, and being there in difficult times. Meanwhile, the coping assistance comes in the form of instrumental assistance such as helping with medical expenses and other material support. Emotional and social support from similar others is provided in the form of understanding and empathy for the caregiver's difficulties and validating the caregiver's feelings and concerns. On the other hand, coping assistance provided by similar others comes in the form of providing feedback, guidance, information, and encouraging suggestions. Besides that, they also work as role models for caregivers so that it fosters hope for them to keep fighting. This study shows that the sources and forms of support received by PwS caregivers help them in overcoming stressors due to caregiving -- both come from significant others and similar others with a variety of both emotional and instrumental support.

Religion plays a role in reducing stress after experiencing adverse life events, which in this study is stress due to caregiving (Koenig, 2005). In addition, religion can also act as a coping mechanism in increasing spirituality and reducing psychosomatic symptoms due to exposure to stress (Pargament et al., 2011). Positive religious coping method is used by caregivers to get a sense of comfort and closeness to God, as a search for meaning, to involve God in problem solving and to achieve life transformation. The interpretation of disease and the role of caregiving undertaken by the caregiver is now connected to their religious beliefs and values. This strengthens them in their caregiving roles. Caregivers rely on God to help them during difficult times, seek strength from God through prayer, belief in God's promises, taking PwS' illness as a gift from God, and accept the fate that

God has set on them. Religious coping by caregivers is a religious resource that may help caregivers overcome stressors due to caregiving.

5. Conclusion

This study shows the importance of the role of personal resources, social resources, and religious resources together in overcoming stressors due to caregiving for family members suffering from schizophrenia. This study extent the stress process theory proposed by Pearlin et al. (1990) by introduce the importance of the role of religious resources. Further research is expected to explore specifically the role of these three resources in the context of caregivers who care for family members with other illnesses and in different cultural or religious groups.

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Identification of Risk Factors for Typhoid Fever in Children Admitted in a Tertiary Care Hospital

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Abstract
Enteric fever remains a major public health problem in developing countries like Bangladesh. Improvement in the health facility, vaccination, and health-related awareness program the incidence of enteric fever among children is not decreased. The study aimed to find out the risk factors for enteric fever in hospitalized children in a tertiary care hospital. Methodology: We conducted a hospital-based case-control study to identify the risk factors in children residing in Dhaka city. We enrolled 50 enteric fever cases as a case group and 50 age-matched febrile patients as a control group. Result: Out of 50 cases, 2 patients were below one year and most of them were pre-school aged 26(52%). Univariate analysis showed that enteric fever is more who take food with the help of the mother and caregiver (OR=7.1); 95% CI= 26.7 -61.3) and never or rarely wash hands before preparing food and before feeding (OR= 5.7; 95% CI= 23.2 -52.8). Cases were eating outdoors at the mobile food vendors and consuming ice-cream regularly (OR=2.28; 95% CI=1- 39) whereas the control group also took street food but less frequently. Conclusion: Enteric fever is an exclusive food and water-borne systemic disease and one of the major public health problems in Bangladesh. Not only overcrowding, unsafe drinking water are the common risk factors but also hand washing both children and caregiver, poor food habit is the important risk factors. So, health education to children and food handlers may reduce the incidence of enteric fever in children.

Keywords: Enteric Fever, Risk Factors, Children

Introduction

Enteric fever is an acute, life-threatening, febrile infection caused by Salmonella enterica serovar Typhi (Typhoid fever) and less commonly Salmonella Paratyphi A B & C (Paratyphoid fever). Enteric fever is a common health problem in many developing countries like Bangladesh. Globally it is estimated that 21.7 million typhoid cases and 5.4 million para-typhoid cases and more than 200000 deaths occur each year (Kliegman RM et.al., (2011). The age incidence of typhoid fever varies in different countries. The children and the adolescents' group in south East and central Asia and Sub-saharan Africa face the greatest burden of illness (Crump JA et.al.,2010; Mogasale V et.al.,2014; Laishram N et.al.,2016).Several studies from different parts of the endemic zone showed that a very high incidence of typhoid fever in the child group especially pre-school children (Ahmad KA et.al.,2000; Sinha A et.al.,1999).

In developing countries like Bangladesh, typhoid fever is around a year's problem and there are no seasonal variations (Rahman AKMM et.al. (2011). Some hospital-based studies showed that the rate of typhoid fever was 9-10% in Dhaka city (Afroz H et.al.,2014; Saha SK et.al.,2001). A community–based data on typhoid disease conducted by ICDDRB, Dhaka indicates that for children less than 5 years the attack rate was 18.7 per 1000 per year which was 8.9 –fold increased rate in comparison to others (ICDDR,B : Publication. Incidence of Typhoid fever, Dhaka 2001, 2003).
Typhoid vaccination does not eliminate the risk of infection because it can prevent about 40-80% of diseases for the first two years (Milligan R et.al., 2018).

S. typhi or Paratyphi , a Gram-negative bacterium is human host-adapted and transmitted by the feco-oral route. It enters the body through ingestion of the organism. So, the risk is highest in overcrowded areas like semi-urban or slum areas due to unsafe water supply, defective sewerage system, and unhygienic food handling practice (Dewan A.M., et al.,2013; Rahman M et.al., 2007). On the other hand, in urban life the health-related behaviors, hygienic conditions, and other social trends are changing. But the incidence of typhoid fever is not significantly decreased rather increasing evidence of the emergence of multi-drug resistant typhoid fever (Akbar MS et.al., 1994; Ochai RLet.al., 2008). As typhoid fever is a food and water-borne disease, in pediatric cases, the food handlers play an important source of transmission (Usera MA et.al., 1993). A very important feature of enteric fever is the carrier state and asymptomatically infected individuals who continue to shed Salmonella and thereby sustaining transmission (Parry CM et.al.,2002).

Taking all this into consideration the aim of our study to detect any change in risk factors or identify new modifiable risk factors for enteric fever in pediatric patients.

Methodology

It was a hospital-based case-control study done in the dept. of pediatrics in a tertiary care hospital in Dhaka city. Cases were the patients registered with typhoid fever and controls were the patients admitted with fever but diagnosed other than typhoid fever during the one year from May 2018 to April 2019. Both case and controls were age-matched, came from the same area, and belong to the middle socio-economic class.

Inclusion criteria

- Case: Febrile patients diagnosed as enteric fever either by positive blood culture for Salmonella or raising titer in serology.
- Control: Febrile patient with negative blood culture for Salmonella, normal serology, no evidence of raising titer and diagnosed other than typhoid fever.

Exclusion criteria

- Patients came outside Dhaka city.
- History of travel outside Dhaka within 4 weeks.

Data collection and analysis

Data were collected by a structured questionnaire describing demographics, socioeconomic conditions, individual personal and food hygiene practices. Both cases and controls were informed about their interviews.

Table 1: Example of the questionnaire

1. What kind of water is used for drinking?
   a. Supply water b. boiled water c. Filtered water
2. What kind of water use during bathing?
   a. Supply water b. Boiled water
3. What kind of water use during brushing?
   a. Supply water b. Boiled water
4. Do you take food by your hand or caregiver?
   a. Own hand b. caregiver
5. Do the food makers wash hands before preparing food?
   a. Always b. sometimes c. Never
6. Do you take street food (Fushka, ice-cream) 2 weeks before this illness?
   a. Yes b. no

Statistical analysis was done by using SPSS version 16. For univariate analysis, we evaluated the differences in risk factors between cases and controls by matched odds ratio (OR) and confidence limits.

Results

During this one-year study period, 50 typhoid fever patients and 50 age-matched control subjects were enrolled. Both cases and controls admitted in this hospital were living in Dhaka city and belong to the same (middle) socioeconomic background and they did not travel outside Dhaka within the last one month. Table 2 describes some characteristics of cases and controls showing the similarities between the two groups.

Table 2: describes the demographic characteristics of cases and controls

Variable	Cases (n=50)	Controls (n=50)
Age		
Infant	2(4%)	3(6%)
Pre-school	26(52%)	21(42%)
School going	22(44%)	26(52%)
Sex		
Male/Female	29/21	31/19

Out of 50 cases, 18 (36%) had positive blood culture for S typhi and 1 (2%) had Paratyphi A while 31 (62%) had a positive widal test.

In Table 3 univariate 1:1 matched analysis showed that there was no significant difference in water supply for drinking and brushing between cases and controls but most of the cases took their bath with supply water (OR=2.7); 95% CI= 5.4 to 42%. Most of the cases were took food with the help of caregivers (OR=7.1); 95% CI= 26.7 -61.3). Hand washing practice before preparing food of cases was worse than controls (OR= 5.7; 95% CI= 23.2 -52.8). Cases had consumed ice-cream and fuchka more often in the 2 weeks before they got ill (OR=2.28; 95% CI=1- 39).

Table 3: Univariate 1:1 matched analysis of risk factors of cases and controls

Variables	cases (%)	controls (%)	OR*	95% CI	Ape**
Drinking water					
Supply water	00(00)	00(00)			
Boiled water/Filtered water	50(100)	50(100)			
Water use during bathing					
Supply water	35	23	2.7	5.4 to 42%	63%
Boiled water	15	27	0.36		

Water use during brushing					
Supply water	16	15	1.09	-16.1 to 20.1%	8%
Boiled water	34	35	0.9		
Feeding practice					
By own hands	10	32	0.14		
Caregiver fed them	40	18	7.1	26.7 to 61.3%	85%
Hand washing before preparing food					
Always	9	28	0.17		
Sometimes/never	41	22	5.7	23.2 to 52.8%	82%
Eating fuchka/ice-cream					
No/Occasionally	23	33	0.43		
>1times/week	27	17	2.28	1 to 39%	56%

*ODDs ratio and 95% confidence interval

**Attributable Proportion in Exposed

Discussion

In our study 50 enteric fever were selected as a case group and 50 age-matched febrile patients were selected as the control group. Table 2 showed the demographic characteristics of both case and control groups. In the case group, the maximum number of patients was (52%) pre-school-aged. Sinha A et al(1999),Saha SK et al (2001) and ICDDRB(2003) also found that children between 2-4 years of age are the most susceptible group. Out of 50 cases, 18(36%) patients were culture positive for Salmonella Typhi and 1 patient was positive S. Paratyphi.

Enteric fever is a food and water-borne disease and transmitted through the oro-fecal cycle. Some common risk factors like overcrowding, drinking water, sewerage system (Dewan A.M., et al.,2013; Rahman M et.al., 2007) were not significantly associated in this study.

Compared with the control's cases were more often taken food from outsides like fuchka, ice-cream, etc. Cases were consumed street food 2 weeks before the onset of enteric fever. We did not know the source of water used in ice factories or street foods. Possibly this was a potential risk factor for enteric fever. Our data were supported by other studies like in Pakistan (Luby SP et.al.,1998), Philippines (Tinaya-Superable JF et.al.,1995) and Indonesia. In this study, we found that the personal hygiene of cases was not good. Here both case and control groups used boiled water for drinking but for bathing and brushing with supply water. In the case of the group, the feeding practice was poor than the control group. In the case, group majority of children were taken food from the caregiver's hand. Here hands play an important role in transmission. Proper handwashing before preparing food or during feeding was very poor among this group. So inadequate hand hygiene practice of convalescent carriers may be a great problem (Rahman AKMM et.al., 2011; Usera MA et.al., 1993; Parry CM et.al.,2002). Due to ethical reasons we could not evaluate the carrier state of food handlers.

It is our observation that risk factors for enteric fever are similar to other studies done in some developing countries. But we found that the child who ate by his or herself were washed their hands properly with soap, but mother or caregiver were not washed hands properly even didn't wash hands because they were busy in multiple activities during food handling.

Conclusion

Enteric fever remains a major public health problem. A significant number of children need hospital admission and sometimes it is life-threatening. To improve awareness about healthy food practice and proper handwashing with soap and water both children and caregivers may reduce the incidence of Enteric fever among children.

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