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Exploring Enablers And Barriers In Implementing Multicomponent Nutrition And WASH Education Programs: Insights From School Teachers And Management – A Qualitative Study

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Abstract
Malnutrition among adolescents has been identified as major issue in low income developing countries which causes deficiencies of important vitamins and proteins leading to extreme situations, susceptibility to infections and many other health hazards. The research intended to explore the perceptions of school going adolescents and their mothers/immediate care takers regarding nutrition, and WASH (water, sanitation & Hygiene) practices at school. Qualitative exploratory descriptive study can provide invaluable information toward the enablers and barriers in implementing multicomponent nutrition and WASH education program. Data was extracted from three focus group discussions conducted with school teachers and four IDIs with their school principals in Hyderabad city. FGDs were conducted with the help of semi structured, open-ended questions. Data analysis was performed with Creswell framework. Categories and themes were created. Identified themes were awareness about nutrition, provision of safe water, sanitation and hygiene, paucity and constrains for the implementation of nutrition and education related program. Subthemes explained the deficiencies, lack of resources, poor governmental support, low socioeconomic status and cultural factors. Findings indicted that school support for Nutrition and WASH education was limited which undermine the capacity of school education program to enhance the nutritional status of the adolescents.

Key words: School Teachers, School Management, Enablers, Barriers, Nutrition, Water, Sanitation, Hygiene, Focus groups, Qualitative Study

1. Introduction:

Balanced diet and nutrition comprising of all fundamental ingredients (carbohydrates, lipids, proteins, minerals, vitamins etc) are required for growth and developments (Poulain, Spielau, Vogel, Körner, & Kiess, 2019; Shirazi, Kazemi, Kelishadi, & Mostafavi, 2017). The need of nutrition changes over the span of whole life specifically at age of adolescent. Appropriate nutrition helps child to grow at his own maximum capabilities and s/he becomes capable of surviving the real time disasters in form of epidemics, pandemics and many more (Dat, Loan, & Van Toan, 2018). The major population across world is comprising of adolescent who are around 1.8 billion, of which 90% are from low and middle income countries who are at risk of poor growth and development (Christian, Smith, & Metabolism, 2018; Hossen, Rahman, & Mashreky, 2016). Malnutrition among adolescents has been identified as major issue in low income developing countries which causes deficiencies of important vitamins, proteins, imbalances leading to extreme situations, susceptibility to infections and many other health hazards (Dat et al., 2018; Kureishy et al., 2017; Rytter, Kolte, Briend, Friis, & Christensen, 2014). Pakistan being the underdeveloped country is far behind in the list of well-nourished adolescents population (Chirgwin, Cairncross, Zehra, & Sharma Waddington, 2021). It has been identified that different diseases effected boys and girls in different pattern and prevalence rate of nutritional imbalances varied across Pakistan highlighting the anemia as most prevalent among girls (56.6%) (Habib et al., 2023). The associated factors included unsafe water, poor sanitation and hygienic condition, poor health awareness, poor financial condition, inappropriate school health education, contaminated water (Das, Lassi, Hoodbhoy, Salam, & Metabolism, 2018).Infectious diseases resulted from poor hygienic practices and unsafe drinking water may also lead to development of malnutrition (Unicef, 2018). Other health issues resulted from poor hygiene and unsafe drinking water are abdominal parasites, diarrhea, severe dehydration, recurrent infections, skin diseases, and worm infestation (Alemu, Muhye, & Ayele, 2021; Lassi, Moin, Das, Salam, & Bhutta, 2017). Studies support that additional support to schools through physical education, integration of nutrition education resources into existing curricula, funding to support the parents and community involvement were also fond beneficial for the school children (Schuler et al., 2018). Previous studies in Pakistan focus on the height and weight and nutritional status of the under 5 year of age children and lactating and pregnant women. This study high light the health status of adolescents that was the vulnerable population at this era. To develop the strategies for the improvement of the nutritional status of adolescents, this study would assist in exploring the phenomenon of interest i.e.,

perceptions, enablers and barriers concerning the implementation of nutrition & WASH as an intervention. Moreover, it might effectively describe the baseline and comprehend the context for administering the intervention at schools for further interventional study.

2. Methods:

A qualitative exploratory study (combination of Focus groups and individual interviews) was employed to collect data in three focus group discussions (FGDs) and Four key Informative Interviews (KII). Three FGDs were considered adequate as no new information emerged from the third FGD. The study took place between Sep 2022 to Nov 2022 in Hyderabad city. The study participants were secondary school teachers who taught to 6th to 8th students were preferred for this study because they are an appropriate setting for adolescents' nutritional and WASH interventions. Four public school (two boys and two girls) from Hyderabad city were randomly selected through the list provided by the secondary school education department. School teachers who are teaching 6th to 8th grade students were purposively selected. The teachers were selected with the help of the school management or head teachers/school principals. Moreover, for the KII, the school management from the four selected schools was invited, and a total of four in-depth interviews were conducted with KIs (Principal/ Head teacher).

3. Procedure:

Both focus group discussion and in-depth interviews were conducted using an interview guide developed to identify the enablers and barriers for the implementation of nutrition and WASH education intervention. Initially, a meeting was held with each school's principal and teachers, to share the scope and objectives of the research and to ask for their cooperation. Informed consent was then taken from the principal, and school teachers. The FDGs and IDIs were conducted in Urdu language by the researcher herself and notes were also taken by research assistant during the sessions while researcher herself noted the key information. FGDs and IDIs were Audiotaped after the permission of the participants. Confidentiality was assured to the participants. The FDGs and IDIs were conducted in school setting. Each focus group discussion lasted approximately 50 to 60 minutes, where as individual interviews lasted approximately 30 minutes and conducted face to face interview. All FGDs and KII were audiotaped and transcribed simultaneously, along with a translation into English, by the researcher herself. Hence, information communicated in the source language was shifted into the target language in such a way that the authenticity of the data was preserved.

Focus group discussions. FGDs were conducted to explore in depth information from the teachers. All FGDs were conducted in the school setting. The FGDs were 45 to 60 minutes long and were carried out in a vacant room with bright light, without any noise. The group discussions were carried out until the point of saturation was reached. 33 school teachers (11 male and 22 female) in three groups were invited to participate in the study. The response rate was 100% for FGDs. The FGDs highlighted the ways in which schools could promote the educational interventions to enhance the recovery and mortality rate with reference to the malnutrition conditions in Hyderabad, Pakistan. Overall, the FGDs investigated the enablers and barriers to the implementation of school-based initiatives

Key informant interviews (KII): For IDIs, four schools were selected, and in each school, one respondent was chosen who had the authority to implement nutritional and hygienic policies in the school and could make amendments if needed. As the school management is involved in multiple tasks related to hygiene and cleanliness in school, health status of the adolescents, therefore, it was considered suitable to conduct an interview with the school management. The KIIs were conducted in separate rooms to ensure privacy and confidentiality with the school management, including head teachers and principals. The interviews were conducted using an interview guide. Most of the questions asked in the IDIs were open-ended to gain deep insights into the perceptions and thoughts of the respondents. The focus of the interview was to understand the enablers and barriers in school-based interventions to improve knowledge, attitude, and practices related to nutrition and WASH practices among school adolescents. Also, to understand the hurdles and barriers that could occur at the time of implementing the nutritional and WASH education programs in the schools.

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Human Subjects approval:

Study was approved from the Aga Khan University Ethical Review Committee (AKU ERC) (Reference NO:2021-3572-19378). Also, permission was accorded from school authorities along with verbal and written informed consent was taken from the participants

4. Data analysis.

For the analysis of data, the Creswell framework of content analysis was used. This framework provides five stages of data analysis (Creswell & approaches, 2003). First, the data was organized by transcribing it into the local language and then translating it into the English language. The transcriptions were read and re-read by the researcher to gain an understanding of the content. The FGDs and IDIs were also transcribed and verified with the recording to boost the accuracy of the data and relevant information from each transcript was organized. Manual thematic analysis was done. Important words and phrases within the content were selected and the data was divided into meaningful units. After that, the units were condensed and labeled with meaningful codes (either as facilitators or barriers) affecting the nutritional status of adolescents. These codes were compared and analyzed to form sub-categories and categories, which were then reduced to themes that addressed the study questions.

5. Results:

A total of 33 school teachers (22 females and 11males) and 4 school principals/head teacher participated in the study. Three FGDs with school teachers and four IDIs were conducted. The researcher continued exploring the phenomenon of interest till the retrieval meaningful data. A rigorous analysis was performed. After analysis the following themes emerged regarding barriers and facilitators for the implementation of the nutrition and WASH education were identified. Following themes were identified that are related to enablers and barriers for the implementation of nutritional and WASH education of intervention. Direct quotations describing teachers and principals' perceptions of certain issues are given.

Theme 1: Hygiene and sanitation. The first theme focuses on recognition of hygienic practice by the adolescents, along with the level of awareness among teachers and mothers. Appropriate sanitation practices and the required resources have also been analyzed and discussed

Hand washing and personal hygiene.

The study emphasized the importance of promoting awareness about personal hygiene as a preventive measure against diseases and public health concerns. This sentiment was echoed by one of the participants, emphasizing a similar focus on the matter.

"The immune system of children can be better if they knew about the importance of hygiene and hand washing. Hand washing is basic in maintaining cleanliness, avoiding germs, and preventing infections. If a child's immune system is robust, they will be able to fight back diseases and recover quickly". (FGD-01; P-10)

Girls schooling. The findings of the study revealed a distressing reality; a number of female students opted to discontinue their education as a result of substandard facilities and unsanitary conditions prevalent in public schools. Parental apprehensions concerning potential infections further contributed to the unjust restriction imposed upon these young girls. This particular concern was echoed by one of the participants in the study:

"Most female students leave the school as they grow up. The schools are not provided with safe and clean washrooms, sanitation facilities and safe water. Mothers don't want their girls to get sick and infected, so they do not let them go to school. Mothers are also concerned about menstrual hygiene of girls in school days". (FGD-2: P-4)

The received responses clearly highlight the significance of prioritizing health standards and upholding the same in educational institutions, particularly those catering children.

Human and fiscal resources. This subtheme describes and delineates hygiene and sanitation amenities in schools, along with human and financial resources available for these purposes. These insights have been derived from students' responses, based on their firsthand experiences, describing the state of facilities provided to them. The analysis showed that while there was adequate awareness amongst the respondents, this was not enacted either by the public health or school officials. One of the principals shared that,

"Our school is not being provided with appropriate number of sanitary workers. The required resources used for cleaning the washrooms and school are not being provided as per requirement. Many of the students and teachers at school go to the washroom and leave the tap open. This results in wet floors and loss of water. There should be a display of a no water wastage chart in the WASH rooms". (IDI-1)

The previous response suggests a significant disregard for the WASH guidelines, including the negligent act of leaving tap water running needlessly. Additionally, the response implies a lack of established procedures in educational institutions, such as the absence of a visible chart discouraging water wastage. The study also notes that children who engage in certain behaviors, such as not washing their hands properly, are more susceptible to contracting these diseases.

Theme 2: Safe water. It has been identified that children lack access to safe and clean drinking water. Moreover, the researcher revealed that the school teachers had keen awareness about the adverse health effects of contaminated water. One of the participants said;

"We ask our children to be very careful when they use water from the school tank. Our water tank has not been cleaned for many years. The dirty water has insects and germs in it. The same water comes in taps and we all WASH our hands in it". (FGD-01; P-6)

Compromising on diet quality including water quality is considered harmful for individual and raises serious concerns. The findings go hand in hand with other responses as well, such as this one:

"The dirty water that is being drunk at school is unsafe and unhygienic. It is big reservoir of infections. It can cause fever, flu, headache, cough, and body aches" (FGD-01; P-8).

It was mentioned that students suffered with health issues such as fever, flu, cold, cough, stomach ache, and vomiting, due to both unclean drinking water and nonavailability of drinking water on the school premises. The school management seemed to be willing to provide facilities to all students, but their roles were found to be dormant, their efforts ineffective in meeting students basic needs. This is evident in the following verbatim,

"The school management wants to provide safe drinking water but it is beyond the management's resources and range. There is no tank cleaner or any other alternative available at school. We have notified but we have not received any response. In primary school water tank, the water comes directly from the tank to the taps". (IDI-02)

Theme 3: Food and nutrition.

The researcher discovered a lack of awareness sessions or educational programs on nutrition and WASH (Water, Sanitation, and Hygiene) at the school level. When investigating students' food consumption habits, it was revealed that students often bring pocket money to purchase snacks like slanty, lays, chips, samosas, and amchoor etc from the school canteen or outside vendors. One participant highlighted this issue, stating that.

"In this area, students come from poor families and bring only a small amount of pocket money, around 10 Pakistani Rupees. With this, they can only afford cheap items from the canteen or outside vendors. Some students bring roti and achar from home. One day, a girl fainted at school, and upon inquiry, it was found that she had not eaten breakfast because she couldn't afford it." (FGD; 1, P-4)

The above response indicates that the nutrition consumption of the students is not adequate. This showed that there is need to teach the students about importance of nutrition at school level. On investigation researcher came to know that at school level no nutrition awareness session is given or teaching by the school teachers. One of the participants said,

"We have tight schedule in regard to cover the already assigned syllabus, and we are not able to conduct sessions on nutrition and WASH. On the other hand, we are not trained in regard to nutrition subject. our suggestion is, if the nutrition and WASH component is added in the science course or separate subjects then we can able to teach.

Theme 4: Barrier. The **r**esearcher discovered that though teachers were cognizant about food, nutrition, safe drinking water, sanitation and hygiene, factors such as lack of resources, poor administrative support, and high inflation surfaced as were barriers in the implementation of nutritional and WASH. These barriers are discussed below.

Socio-economic conditions. It was mentioned during the interviews that the main causes of steep increase in student turnover were family pressures, economic constraints etc. along with dilapidated and constrained sanitation facilities. During the interviews, one participant stated:

"The families living in this area are not strong economically. The girls support their families and parents by doing labor tasks at home or by working as maid servants. They stay at home and do not join a school. Moreover, many families do not prefer that girls go school and study more. The lack of education has been identified as a major hurdle and barrier in the implementation of the WASH program". (FGD-2: P-9)

Another one added,

"There are families who cannot pay more fees because of their poor socioeconomic status. Moreover, the schools are very limited in numbers as compared to the population. The appointed teachers are also not highly qualified. The parents don't want to get their girl admitted in schools. They think that daughters will get married and leave. They want their sons to be highly educated". (FGD-2: P-6)

Furthermore, the response outlined other major issues to quit school, such as, the inability to pay school fees. More importantly, the study also pointed out that with better education opportunities, there was a strong likelihood for children, especially females, to improve their own situation, as it would improve their decision-making skills.

Poor government support. The lack of government support evident in the lack of facilities for clean drinking water provision, sanitation concerns, and catering for hygienic food was reported by teachers and students. Again, it was highlighted that the administrative staff were negligent towards the engagement of resources. This is supported by the following verbatim,

"It is the fault of the government. No facilities like safe drinking water, healthy nutrition and hygiene are being provided in schools for children. It is the responsibility of the government to control the prices of the daily diet or any food item. This will make it easy for every person to provide healthy food to their children. In the long run, the future children of Pakistan will be capable of performing their job with good health". (FGD-3: P-6).

The government is regarded as one of the largest stakeholders in this endeavor. However, it has been observed that students receive no relief. The government has failed in its primary duty of facilitating children and schools with an appropriate infrastructure. The schools and the administration are unable to address the disparity between nutrition and sanitation, and the students are bearing the direct negative affect. It was stated by one of the participants that,

"In my point of view, the government is very much responsible for a balance diet not being given. All the good things are very expensive and prices are raised every day. A junk food burger is readily available and affordable. Instead, if we buy something else like fruits, etc., it is very expensive. We all are unable to buy it. No one mention that we are unable to buy it. The economically strong people are also unable to buy fruits". (FGD-3: P-10)

The cumulative responses to both the issues indicate that the underlying snag in Pakistan, in general, and its schools, in particular, is less capital expenditure on education, which prevents school from providing nutritional and sanitation facilities, citing disproportionate budget allocation. From the responses, it is evident that buying junk food is more convenient than getting healthier diet. The government's unwillingness to spend sufficient amount on the education sector is considered to bear a negative and debilitating impact on the students, since the school canteens are unable to cater to the most basic nutritional needs of the students. Another response is;

"Most of the government schools do not have safe water, hygienic washrooms, and healthy food. This topic has never been discussed in government schools before. There must be clean drinking water. The government and the management should also look into things that students eat during the lunch break, as it must be hygienic. Secondly, teachers should also be provided with awareness, as students spend seven to eight hours a day in schools and the messages teachers give them directly impact them". (IDI-03)

While discussing the role of schools and availability of resources, it was found that nothing was available in schools. Moreover, school heads strongly recommended that there should be awareness sessions for teachers.

Labor work. There are also obvious issues observed by the teachers concerning their students, such as their turbulent and volatile socio-economic conditions. One of the responses obtained regarding this was,

"In our school, a child who is in the 8th class, was always sleeping during school time. One day, I asked the reason of his sleep and what he does every night? He replied that he sold burgers at night, and when I come home, it is three or four o'clock. He could not take rest and remained in the same state in the morning and could not even have breakfast. He is often sick and has poor health". (FGD-3: P-4)

The students engaged in night time work was unable to participate in school activities or pay attention to the lessons in school. The disadvantages also included academic lag compared to their peers and challenges to achieve the necessary results pertaining

to several matters, be it their education or awareness related to nutrition and sanitation. Another common response obtained from teachers, related to this issue was:

"Most of the children who come to our school are poor. They do labor work after school time. Some of them are masons, someone is going to be an electrician and someone is going to be a tire dealer. Thus, they come home at twelve o'clock in the night. Since they are working, because of this they do not get enough sleep. And when they come in the morning, they fall asleep in class". (FGD-3: P-9)

The obvious inference from the above quote is that since the child is being forced to work for his family, chances are that he has family limited healthy food options. His low economic status compromises his/her health and affects his performance at school. It is, safety, hygiene practices, and behavioral changes among students.

Theme 5: Way forward. Many suggestions were given by the participants to improve the situation. One of the participants said,

"Yes, I would suggest that teachers should maintain a good relationship with the children. For instance, the class teacher should provide sufficient number of lectures on healthy diet and cleanliness to the children so that they can get an idea how important it is to be healthy. I have noticed that our children do not pay much attention to the healthy items and refuse to eat anything we provide to them". (IDI-04)

Another participant said that,

"Teaching sessions should be planned through activity base strategies. For example, if we like to teach benefit of banana then teachers should plan to ask students to come with banana from home. In that way they can learn and also eat the fruit. In private schools' students have good health because of such type of activities"

The above-mentioned response reflects the importance of maintaining a conducive relationship between students and teachers so that matters related to nutrition, sanitation, and hygiene can be discussed. School based interventions are effective in engaging students with matters concerning nutrition, sanitation, hygiene, and their importance for student's health. The WASH intervention is potent since it seeks to involve more stakeholders in this process, such as parents (specifically mothers), to ensure that children get proper nourishment. One of the participants said,

"If the school will conduct several awareness programs or the teachers will give lectures to them then they will get to know about the level of significance regarding these two major aspects. Earlier, lunch was provided to students by the government but later it was stopped. If the government starts it again, our children will go to school and will also be healthy". (FGD-3: P-7)

In addition, school-based interventions can better facilitate awareness programs by inviting mothers to sessions, consequently carrying out meaningful discussions on matters concerning nutrition and sanitation. Moreover, appointment of doctors for the treatment of minor ailment and routine physical checkup was also suggested. One of the teachers stated:

"There was a time when a doctor was appointed in the school for routine checkup and treatment of minor ailments. I strongly feel that doctors should be appointed in all government schools. This will help align all things align and promote a healthy and safe educational environment". (FGD-3; P-10)

6. Discussion

This study, using qualitative methods, explored the enablers and barriers. The study emphasized the importance of promoting awareness about personal hygiene as a preventive measure against diseases and public health concerns. The responses received unequivocally highlight the significance of prioritizing and maintaining health standards in educational institutions, particularly those catering to children. These are congruent with findings of (Bhamani et al., 2020) who underscore the vital role played by school administrations in ensuring sanitary conditions for students, thereby safeguarding their overall health and hygiene. The study conducted by (Mahmood et al., 2020) highlighted that due to the country's inability to meet basic sanitation demands had led to a negative impact on children's health. The study found that there was a direct connection between health and sanitation, and without addressing both there were significant chances of children falling ill. One of the issues observed due to unsanitary conditions was the increase in sanitation related diseases since reducing pathogens in water was rarely considered.

It has been recognized that girls, in particular, require a clean and secure environment due to the specific needs associated with menstrual hygiene management. Similar findings have been highlighted by (Zyoud & Zyoud, 2023) in their research, emphasizing that absenteeism could be reduced and academic performance and cognitive abilities could be enhanced by addressing dehydration issues and fostering a clean and healthy environment for both boys' and girls' students.

It was also observed that students were reluctant to use school washrooms due to cleanliness and safety issues. Previous literature also suggests the crucial need of access to public health care and facilities concerning sanitation and safety (McMichael & health, 2019). Furthermore, critical concerns such as maintaining dry floors and ensuring clean drinking water should be considered integral in schools. Similar findings were highlighted by (Charles Shapu, Ismail, Ying Lim, Ahmad, & Abubakar Njodi, 2021) , indicating the acute significance of sanitation for an individual's health, particularly for the improvement of health and growth in adolescents(Edrees, 2023) emphasized the criticality of water quality, based on their findings, highlighting the prevalence of serious waterborne illnesses like schistosomiasis among children who used unclean tap water for hygiene and sanitation purposes. The current study also foregrounded comparable findings, pin pointing those children who used contaminated tap water and exhibited inadequate behavior, such as not washing their hands properly, were more susceptible to contracting these diseases.

A compromise on diet quality taking aside compromised water quality is considered harmful for an individual and has raised serious concerns regarding malnutrition. The above response is also mirrored by (Charles Shapu et al., 2021) since malnutrition is believed to have a proportional relationship with dietary intake. Foods and its efficacy have also been linked with hygiene , since there is a considerable risk of virus transmission through channel such as oral transmission as stated by (Gizaw & Addisu, 2020). Hygiene simultaneously extends to basic etiquettes, such as keeping the toilets and kitchen clean, and using disinfectants regularly before preparation of any food material.

The study findings outlined that parent exerted more efforts on the education of boys as compared to girls, considering it as future source of support. This observation is a mirror image of the conditions prevalent in rural areas of Pakistan, where most of the issues pertaining to education alone are related to social pressures that restrict a girls education beyond a certain level (Gizaw & Addisu, 2020). The patriarchal setup in Pakistan consolidates the concept of giving more preference to boys in the context of education, as compared to girls; boys have better economic utility since they are more likely to participate in employment opportunities (Khattak, 2018).

Also, inflation has catastrophically affected the community as indicated by the participants stating inability of parents to pay school fees being the reason for discontinuing school, particularly for girls. However, Sheikh and Loney (2018) observe in their study that improving girls' education is a necessary step that needs to be taken by the administration to mitigate social evils, such as child marriages. Provided with better education opportunities, there would be strong likelihood for the children, especially girls, to improve their condition along with fostering, stout decision-making skills (Sheikh & Loney, 2018).

The students working at night indicated challenges they encountered in concentration on classroom lessons. Similar aspect has been highlighted in the report published by the (Martinez & Terway, 2016) where child labor is equated with a negative school attendance . The disadvantages associated with child labor included students lagging behind their peers and struggling to achieve the necessary results pertaining several matters, be it their education or awareness related to nutrition and sanitation. The obvious inferences from the study indicate that children are forced to work because of fairly limited access to healthy food options.

The school administration was fully aware about adverse effects of poor diet, and ensuring health issues, on students' well-being. However, no initiative has been taken to improve the situation. The school administration remained negligent in providing students with nutritionally rich food, and has failed in incorporating nutrition education as an integral component in curriculum. This led to a significant damage to children's health and their wellbeing. According to (Morrison, Shin, Tarnopolsky, & Taylor, 2015), there has been significant benefits for children enrolled in a school that maintains a nutrition program. Through such program, the students are provided with carefully planned meals that are not only nutritionally dense but also have a higher standard of hygiene and sanitation.

Moreover, it has been identified that buying junk food is more convenient due to lower cost when compared with getting healthier options. Thus, the children were often reported malnourished. The findings of current study concurred with those of (Teo, Chin, Lim, Masrom, & Shariff, 2019),where malnutrition was found to be one of the major concerns, as its prevalence in children was the leading factor in causing severe health issues, such as poor cognitive functioning leading to heightened stress. The government's reluctance to spend appropriate amount on the education sector is considered to have a negative and debilitating impact on students, since the school canteens are unable to cater to the most basic nutritional needs of the students (Kousar, Batool, Batool, & Zafar, 2020).

The cumulative responses of participants in current study indicated that the underlying identified issues and barrier of poor administrative support, less capital expenditure on education, unavailability of any food relief and packages, non-provision of sanitation, unavailability of safe drinking water facilities, and disproportionate budget allocation restricted the health outcomes (Kousar, Batool, Batool, Zafar, & Education, 2020). Previous research has highlighted the economic benefits related with health and education that assist in developing a productive workforce in the long run. Further, Frakt (2018) hinted a strong correlation between economic conditions and sanitation, emphasizing acquisition of the required health infrastructure to provide nutritious food choices under hygienic conditions. Similar findings were depicted by (Mogaji et al., 2022), underscoring significant issues related to malnutrition leading to poor health, due to inability to gain basic health care services, such as sanitation facilities. The role of schools and availability of resources, have been found significant in improving awareness and health of adolescents.

Limitations:

The research study was conducted in school settings involving teachers who were employees under an authority. Teachers might not express their candid views on some issues related to policy level. The schools were located in resource constrained setting and results obtained might not be applicable to other affluent setting. The study was conducted in one of the cities of Pakistan, which has certain different characteristics compared to other cities in the country. The results presented the need for intervention that focus on a range of factors and their elaboration on the most same applicable in same demographic characteristics population.

7. Conclusion:

Schools play a crucial role in enhancing the students' health through nutrition and WASH education, which can reduce nutrition-related diseases. However, limited resources pose challenges to implementing adequate intervention. Teachers need to adopt effective educational strategies and leverage their influence to deliver nutrition information, addressing poor nutrition knowledge among students. Environmental factors are essential for promoting healthy eating. Positive influences like effective nutrition and WASH and nutritious school meals, should be strengthened, while negative influences like unhealthy food options and peer pressure should be minimized. Teachers play a vital role in shaping students' eating habits and must be equipped with robust nutrition knowledge and skills. The study also highlights the importance of nutrition and WASH (Water, Sanitation, and Hygiene) education programs in improving health outcomes among adolescents in Hyderabad, echoing similar findings from other studies. Despite the proven benefits of educational interventions for health awareness, there is a lack of such initiatives from school administrations. The study also points out the effectiveness of global school-based nutrition programs, such as those in Malaysia, and contrasts this with a lack of similar efforts locally, indicating a gap in government support. Economic conditions significantly impact schools' ability to provide adequate nutrition and sanitation, emphasizing

the need for collaboration among stakeholders, including the government and schools, to ensure children receive proper health care, nutrition, and hygiene education in line with WASH standards.

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