

Factors Affecting Health-Related Quality of Life of School-Going Children and Its Perceived Impact on Educational Outcomes



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Abstract: *This study investigated the factors affecting Health-Related Quality of Life (HRQoL) of school-going children aged 6–14 years and its impact on educational outcomes, as perceived by mothers in Tehsil Faisalabad of city Faisalabad, Pakistan. The study was conducted in the Colony Punjab Government Servant Housing Society. The total residential units in the society was 1200 out of which sample of 120 household mothers were selected by using purposive sampling technique. Using a cross-sectional quantitative design, data were collected from 120 respondents through structured questionnaire employing a 5-point Likert scale. Four major factors were examined: health-related factors, socioeconomic status, environmental conditions and educational outcomes. Findings revealed that among health-related factors, regular physical activity was rated most influential (Mean = 4.27), followed by eating habits (Mean = 4.20) and adequate sleep (Mean = 4.17). Regarding socioeconomic status, availability of proper clothing and school materials received the highest agreement (Mean = 4.07), while limited family income was least acknowledged (Mean = 3.00). Among environmental factors, access to safe drinking water ranked highest (Mean = 4.34), while reduced outdoor activity due to poor environmental conditions ranked lowest (Mean = 3.67). In terms of educational impact, parents most strongly agreed that good physical health improves school performance (Mean = 4.32), while poor nutrition affecting learning ability received comparatively lower agreement (Mean = 3.67). However, for future research Integrated school-based health screening programs and community-level nutrition awareness campaigns are recommended to improve children's HRQoL. Local authorities should also ensure safe environmental conditions and incorporate mental health awareness into school curricula to enhance children's academic performance.*

Keywords: Health-Related Quality of Life, HRQoL, Children, Educational Outcomes, Environmental Conditions, Socioeconomic Status, Parental Perception

Introduction

Children's health and well-being are affected by many factors such as physical health, socio-economic status, environmental conditions, and each of these factors contributes to the children's HRQoL in Pakistan. Afridi et al. (2013) also pointed out that the negative health status of the child can have a significant effect on the educational and skill development opportunities available to them and suggested that individual, parental and lifestyle factors can all have a significant role in the child's health perception and in his/her educational results. In addition, school environment, emotional well-being and family functioning were found to be important dimensions of HRQoL among school-going adolescents in Pakistan by Siddique et al (2015), and this suggests that children's quality of life is related to both their school and family environments. In the context of Pakistan, these studies highlight the importance of studying the factors affecting children's HRQoL, as parents are the main actors who interact first-hand with the children and influence their health behavior, daily routine, and education.

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Health-Related Quality of Life (HRQoL) is a well-defined concept and is known to cover various domains of children's physical, psychological, social and functional health. HRQoL is not just a measure of whether children are ill or not, but it reflects the effect of health on children's daily lives, such as their ability to attend school, interact with their peers, and regulate their emotions. HRQoL is therefore seen as an important outcome measure for pediatric health and educational research (Ravens-Sieberer et al., 2014).

The literature on children's HRQoL indicates a wide range of factors (health, socioeconomic and environmental). Households with higher socioeconomic status have the means to provide their children with more supportive environments (a healthy diet, a supportive family and community, a safe home, and access to health care services), which are associated with better physical and psychological functioning among children. Socioeconomic disadvantage, on the other hand, has been linked to lower HRQoL on various levels such as physical health, emotional health and social functioning (von Rueden et al., 2006).

Factors such as psychosocial and environmental factors also have a significant influence on children's quality of life. Other factors that are protective and improve HRQoL include family support, positive peer relationships, neighborhood safety, and school environment. Similarly, mental health problems, family stress, and neighborhood environment are also associated with HRQoL. Longitudinal evidence indicates that risk and protective factors are enduring over the course of children's development (Meyrose et al., 2018).

Parents are important sources of information for the evaluation of children's HRQoL as they are intimately involved with their child's health, behavior, social interactions and educational experiences. Parental assessments of some aspects of Quality of life (QoL) may differ from those of children, but for those that are more easily observed, such as physical health and functioning, and especially for younger children, parental reports are a useful and important source of information (Rajmil et al., 2004).

Children's Health-Related Quality of Life is emerging as a key public health indicator because it is a measure of the effectiveness of health, education and social services. Having a high HRQoL in childhood is important for physical growth, emotional strength, social skills, and cognitive development, which are crucial for adulthood. On the other hand, poor HRQoL in childhood could have a chronic impact, such as a higher likelihood of developing chronic illnesses, mental health issues, a lower educational level, and lower economic productivity in adulthood. As a result, children's quality of life is now a key focus of governments and international organizations striving towards sustainable development goals in health and education (United Nations, 2015; Halfon et al., 2014).

Another key aspect of children's Health-Related Quality of Life is mental and emotional Health. Anxiety, depression, loneliness and emotional stress can interfere with a child's ability to focus, play with other children, and be involved in classroom activities. Family relationships, parenting, school climate and peer support have a significant impact on emotional well-being. Research has demonstrated that children whose parents and teachers emotionally encourage them have more positive self-esteem, coping mechanisms, and academic achievement. The results of this study show that fostering emotional well-being is as critical as physical well-being to children's quality of life (Kieling et al., 2011; Polanczyk et al., 2015).

Childhood lifestyle behaviors also can impact Health-Related Quality of Life long after. Positive life practices such as a healthy diet, getting enough sleep, physical activity, and minimizing sedentary time have a positive impact on children's physical fitness, mental health, and cognitive functioning. Unhealthy eating habits, lack of sleep, excessive TV watching and physical inactivity, on the other hand, correlate with obesity, tiredness, behavior issues and poor academic performance. Promoting healthy habits in the home and school environment can then benefit children's health and learning (Chaput et al., 2020; Saunders et al., 2016).

Children spend a significant part of their daily lives in educational institutions, and the school environment is an important place to promote children's health and well-being. School climate and the relationships between teachers and pupils, safe learning environments, opportunities for physical activity, and effective health education are important factors in students' Health-Related Quality of Life. Schools with a focus on health promotion in their education curriculum have the potential to increase the health of children

and young people, as well as attendance, motivation and educational outcomes (Langford et al., 2015; Bonell et al., 2014).

Children's Health-Related Quality of Life has special relevance in developing countries where socioeconomic inequalities, a shortage of health-care resources and environmental problems remain influential on child development. Local evidence can offer deeper insight into context-specific issues and help to inform the design of contextually appropriate interventions to meet the needs of children and strengthen families. The goal of the present study is to provide practical evidence to support designing child-centered policies for health, education and social welfare that will help to address parents' perceptions of the factors affecting children's HRQoL and its effect on educational outcomes in Pakistan.

There is growing recognition that Children's Health-Related Quality of Life is a multidimensional construct, which will need a multi-sectoral approach. While health care services are important to the well-being of children, their well-being cannot be improved without a coordinated effort from families, schools, communities and policymakers. Schools have a significant role to play in supporting children's social and academic growth, their physical and mental health and wellbeing and encouraging healthy behaviors in a safe place. The combination of these sectors can support children to achieve better health, higher school participation and better educational outcomes. Hence, understanding what factors impact HRQoL can serve as a basis for the creation of comprehensive policies and interventions that promote children's overall development (Kolucki et al., 2018; Darling-Churchill & Lippman, 2016).

The educational outcomes have also been associated with children's HRQoL. Physical and psychological health helps children stay in school, be actively involved in learning, focus, and perform academically. On the other hand, low HRQoL can lead to absenteeism, decreased motivation, cognitive dysfunction and poor educational performance. The importance of parents' perceptions of these relationships is that they affect children's health behaviors, educational support, and access to health and social resources.

The main objective of this paper is to investigate the perceptions of parents of the factors that impact children's HRQoL, specifically health, socioeconomic status and environment, and how these factors are perceived to affect educational outcomes. The results of this study help to clarify the link between children's well-being and academic achievement and could be used to design integrated interventions that could enhance children's health and school performance.

Research Questions

1. What are the factors affecting Health-Related Quality of Life (HRQoL) of school-going children as perceived by mothers in Tehsil Faisalabad?
2. How does socioeconomic status influence the HRQoL of school-going children aged 6–14 years?
3. What is the role of environmental conditions in shaping children's Health-Related Quality of Life?
4. What is the perceived impact of children's HRQoL on their educational outcomes as reported by mothers?

Research Methodology

Study Design

A cross-sectional quantitative research design was used in this study. This design was selected because it allows the collection of data at a single point in time to examine the perceived relationship between Health-Related Quality of Life (HRQoL) and educational outcomes among school-going children. The cross-sectional approach is appropriate for describing current conditions and identifying patterns within the study population.

Population and Sample

This study was conducted in Tehsil Faisalabad of the city of Faisalabad. Data were collected from the Colony Punjab Government Servant Housing Society. The colony was selected conveniently as being accessible and having households with school-going children aged 6 to 14 years. The area provided an appropriate

environment to study the factors affecting HRQoL of the children. The total number of residential units in the selected housing society was 1200, from which a sample size of 120 participants (household mothers) was selected by using the purposive sampling technique via www.surveysystem.com with a confidence interval of 95%. These 1200 houses formed the total population frame for the study, but not all the families fitted the inclusion criteria of having children within the required age range. The households were screened, and 1020 households were found to have children aged 6-14 years and were identified as eligible and targeted for data collection. The other 180 households were not used as they did not have children in the appropriate age range.

Instrumentation and Data Collection

The data were collected by a structured questionnaire that used the 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire had items covering the following areas: physical health, psychological health, social interaction, environment, and educational outcome. The data collection method was face-to-face household visits. Respondents were informed about the aim of the study and gave consent to participate before being briefed. Strict confidentiality and anonymity of responses were maintained.

Ethical Considerations

Research was carried out in accordance with the standards of ethics and values. All respondents were asked to give their informed consent prior to the data collection, and they all agreed to participate voluntarily. The participants were briefed on the purpose of the study and their anonymity, and confidentiality was assured. All of the data collected were used only for academic research and were treated confidentially to ensure that participants' privacy was protected. There were no invasive procedures or major risks involved in the study, and the rights and dignity of all the respondents were respected in the research process.

Data Analysis

The data collected were coded and processed using the Statistical Package for Social Sciences (SPSS). The data were analyzed using descriptive statistical techniques such as frequency and percentage distribution for description of the demographic characteristics of the respondents. The central tendency for responses was measured using the mean and weighted mean, and the variability in the data was measured using the standard deviation. Further, the ranking technique has been employed to determine the most and least important factors influencing HRQoL and its perceived effect on school outcomes for school-going children. All of these statistical methods contributed to an interpretation of the study findings that was clear and systematic.

Results

This section provides a summary of parents' perception of the factors that affect children's health-related quality of life (HRQoL) and how these factors affect education outcomes. The results illustrate the connection between children's health, socioeconomic status and environmental factors and their physical, emotional and social development and the impact these factors can have on their academic achievement. The analysis also provides a comparison of the relative significance of these factors and shows how changes in HRQoL can impact school attendance, the ability to learn, participation in class, and academic performance.

Table 1

Mean, Weighted Score, Standard Deviation, and Rank of Health-Related Factors Affecting HRQoL of Children

Health-Related Factors	Weighted Scores	Mean	S.D.	Rank
Regular physical activity improves my child's health.	2246	4.27	0.77	1
My child's eating habits have a major impact on his/her health.	2207	4.20	0.89	2
Adequate sleep and rest improve my child's well-being.	2194	4.17	0.88	3
Overall health affects child's daily activities.	2046	3.89	1.06	4
Frequent illness reduces child's performance in school.	2040	3.88	1.09	5

Scale: 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

Table 1 shows children's health-related quality of life (HRQoL) perceived by the respondents about health-related factors affecting children's health-related quality of life. The mean values of the items were in the range from 3.88 to 4.27, which showed that the respondents generally agreed that practicing health-related things is very important for their children's health and well-being. The highest rating was for the statement "Regular physical activity improves my child's health" (Mean = 4.27, S.D. = 0.77), followed by "My child's eating habits have a major impact on his/her health" (Mean = 4.20, S.D. = 0.89), and "Adequate sleep and rest improve my child's well-being" (Mean = 4.17, S.D. = 0.88). The results show the high level of awareness among parents of the value of practicing a healthy lifestyle as an indicator of children's physical health. Respondents also indicated that overall health has an impact on children's daily functioning (Mean = 3.89) and that frequent illnesses affect school performance (Mean = 3.88), suggesting that children's overall health has an impact on their school performance. In general, the results show that parents are knowledgeable about the influencing factors in their children's HRQoL, which is a health-related factor. They recognize that physical activity, balanced nutrition and good sleep habits are key components of children's health and that if children are ill and not well, they may suffer a negative impact on their daily functioning and educational performance. The results highlight the need to promote healthy lifestyle habits to improve overall levels of wellbeing in children.

Table 2

Mean Value, Weighted Scores, Standard Deviation and Rank According to the Socioeconomic Status Affecting HRQoL of the Children

Socioeconomic Status (SES)	Weighted Scores	Mean	S.D.	Rank
Your child has proper clothes and school materials throughout the year.	2140	4.07	0.97	1
We can easily access healthcare services for our child.	2102	4.00	0.99	2
Unhealthy food affect child's health.	2075	4.00	1.04	3
Education level of parents influences how I take care of my child's health.	2075	4.00	1.04	3
Financial stress in the family affects my child's mental and emotional health.	1840	3.50	1.32	4
Poor housing conditions affect your child's physical well-being.	1826	3.47	1.31	5
Lack of proper transportation affects my child's access to healthcare.	1718	3.27	1.17	6
Your child's health is affected by limited family income.	1541	3.00	1.35	7

Scale: 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

The results from Table 2 show that respondents believe there is a connection between SES and children's health-related quality of life (HRQoL). The mean scores were between 3.00 and 4.07, suggesting a general consensus that SES factors have a significant impact on children's health and wellbeing. Mean = 4.07, S.D. = 0.97 for "Your child has appropriate clothing and school supplies all year long" and "We can easily access health care services for our child" (Mean = 4.00, S.D. = 0.99). The respondents also concurred that unhealthy food has an impact on children's health (Mean = 4.00) and the education level of parents has an impact on how the parents take care of the health of their child (Mean = 4.00), which shows that it is important to have adequate resources, nutrition, and parental knowledge for children's well-being. The financial pressures that impact children's mental and emotional health (Mean = 3.50) and substandard housing conditions that impact physical well-being (Mean = 3.47) were moderately ranked, meaning that these are issues of concern for many families. Lower-ranked factors – comparative lack of proper transportation for access to health services (Mean = 3.27) and limited family income on children's health (Mean = 3.00) were also noted by respondents but were comparatively lower ranked. The results overall indicate that parents believe that socioeconomic status is a primary factor influencing children's HRQoL. Financial stability, housing and resource availability are still concerns for families, and continue to impact children's physical, emotional and social health, despite good availability of basic items like clothing, school supplies, and health care services.

Table 3

Mean Value, Weighted Scores, Standard Deviation and Rank According to the Environmental Factor Affecting HRQoL of the Children

Environmental Factors	Weighted Scores	Mean	S.D.	Rank
Safe drinking water is available for my child.	2281	4.34	0.71	1
The cleanliness of our home environment affects my child's health.	2150	4.09	7.56	2
My child's well-being is influenced by the availability of clean and safe play areas.	2036	3.87	0.87	3
Air and noise pollution in our area affects my child's health.	2006	3.82	0.86	4
Unsafe streets or traffic make it difficult for my child to play outside.	2000	3.81	1.05	5
My child's outdoor activities are reduced due to poor environmental conditions.	1929	3.67	1.138	6

Scale: 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

Table 3 shows the opinions of the respondents on the issue of environmental factors that impact children's health-related quality of life (HRQoL). The mean values obtained from the responses ranged from 3.67 to 4.34, which means that generally the respondents agree that environmental conditions play a significant role in children's health and well-being. The highest ranked statement was "Safe drinking water is available for my child" (Mean = 4.34, S.D. = 0.71), with a high level of agreement that safe drinking water is important for the child's health. The importance of a hygienic home environment was reflected in the second highest mean score, with "The cleanliness of our home environment affects my child's health" (Mean = 4.09, Rank = 2). The importance of the following environmental factors influencing the well-being of children was also agreed: unsafe streets or traffic that limit outdoor play (Mean = 3.81), air and noise pollution that affects health (Mean = 3.82), and availability of clean and safe play areas (Mean = 3.87). While the lowest ranking was "My child's outdoor activities are reduced due to poor environmental conditions" (Mean = 3.67, S.D. = 1.14), the responses were overall agreed, suggesting that children may have limited outdoor activities because of poor environmental conditions. Overall, the results indicate that parents understand the value of a clean, safe, and healthy environment for children's health, physical activity, and overall quality of life, and that exposure to environmental hazards like pollution and unsafe places can have a negative impact on children's wellbeing.

Table 4

Mean, Weighted Score, Standard Deviation, and Rank of Perceived Impact of HRQoL on Educational Outcomes

Impact of HRQoL on Education	Weighted Scores	Mean	S.D.	Rank
My child's good physical health helps improve school performance.	2271	4.32	0.65	1
My child's regular participation in physical activities improves academic performance.	2172	4.13	0.73	2
My child's quality of sleep contributes to better class performance.	2161	4.11	0.66	3
My child's emotional well-being has a positive effect on his/her education.	2122	4.04	0.95	4
Stress or anxiety negatively affects my child's academic performance.	2015	3.83	1.17	5
Frequent illness affects my child's learning progress.	2008	3.82	1.05	6
Poor nutrition affects my child's learning ability.	1928	3.67	1.18	7

Scale: 1 = Strongly Disagree | 2 = Disagree | 3 = Somewhat agree | 4 = Agree | 5 = Strongly Agree

Table 4 shows the perceptions of parents about the effects of HRQOL on their child's educational outcomes. The mean scores were between 3.67 and 4.32, suggesting respondents generally agreed that HRQoL plays an important role in children's academic learning. Regular participation in physical activities improves academic performance (Mean = 4.13, S.D. = 0.73) and quality sleep contributes to better class performance (Mean = 4.11, S.D. = 0.66) were the next two most highly ranked statements. The parents also concurred that educational performance is linked to emotional well-being in a positive way (Mean = 4.04, S.D. = 0.95). However, despite being ranked lower, respondents also said that stress or anxiety (Mean = 3.83), frequent illnesses (Mean = 3.82) and poor nutrition (Mean = 3.67) have a negative effect upon children's learning and academic progress. In summary, the results indicate that maintaining good physical health status, emotional well-being, healthy lifestyle habits and appropriate nutrition are all important for improving children's educational outcomes.

Discussion

The present study investigated the factors affecting the HRQoL of school-going children and perceived effects on educational outcomes as perceived by mothers. The results suggest that several interrelated factors such as health-related behaviors, socioeconomic factors and environmental factors influence children's HRQoL. The results also indicate that children's educational performance improves as their HRQoL is better.

The results indicated that physical activity had the highest effect on children's HRQoL, followed by eating healthy and sleeping enough. Mothers strongly agreed that these lifestyle behaviours have a significant impact on the overall health and well-being of children. The results of this study agree with those of Rodriguez-Ayllon et al. (2020), who found that physical activity benefits children's health, psychological health and quality of life. Similarly, Wu et al. (2024) reported that healthy lifestyle factors, such as a balanced diet and adequate sleep, are important factors that positively influence HRQoL among children in school. Additionally, the respondents agreed that frequent illnesses impact children's everyday functioning and school achievement, recognizing the importance of good health for well-being and school achievement.

Socio-economic conditions were also thought to be important factors affecting children's HRQoL. The importance of having proper clothes, school supplies, meeting medical needs, healthy foods and parental education were all important factors mentioned by respondents to support the well-being of children. These results are consistent with the findings of Chen et al. (2022), who found that socioeconomic inequalities affect children's physical, emotional and social health as reflected in access to health care, nutrition, education and family resources. Even though the mothers received less agreement for limited family income, they also knew that children's mental and physical well-being can be negatively impacted by the financial strain and poor housing. This indicates that children's quality of life is still shaped by their socioeconomic resources beyond income. This was also noted by Marmot et al. (2020), who stated that the socioeconomic gaps affect children's health by affecting the child's living conditions, educational opportunities, access to healthcare and other social factors. Similarly, Reiss (2013) found that children from disadvantaged socio-economic communities are at risk of experiencing adverse physical, emotional and social outcomes compared to their more privileged counterparts. However, Environmental factors also proved to be influential factors on children's HRQoL. There was a relatively high level of agreement about the provision of safe drinking water resources, household cleanliness and safe play areas, and pollution and unsafe outdoor environments were seen to limit children's opportunity for physical activity. This is in line with the World Health Organization (2023), which states that children's physical and psychological development cannot be achieved without safe water, sanitation, clean environments and secure recreational areas. UNICEF (2023) also notes that safe environments and enabling community facilities play an important role in children's wellbeing and healthy development.

The study also revealed that an improvement in HRQoL was perceived as an improvement in children's educational outcomes. Moms felt that physical health, routine exercise, sufficient rest and positive emotions positively impact a student's school success, while stress, sickness, and poor nutrition negatively influence a

student's performance and learning. These results were confirmed by the OECD (2023), which found that healthier children have better school attendance, higher engagement and better academic performance. Likewise, Darlington et al. (2022) noted that the physical and emotional health of children will have a positive impact on their concentration, learning potential and educational outcomes. The results confirm that children's overall health should be a key focus for enhancing education outcomes.

The overall findings indicate that HRQoL in children is a multi-dimensional phenomenon with interrelated health, social and environmental factors. Mothers felt that having a healthy lifestyle, family support and a safe environment all play a role in supporting and nurturing children's physical, emotional and social health, which then benefits their educational performance. The results underscore the importance of family, school, health care, and policy-based approaches. School-based health promotion programs, nutrition education, regular physical activity and access to health care services and community safety can all contribute to enhancing children's HRQoL and achieve this while fostering their academic achievement.

Limitations

This study has certain limitations. The cross-sectional design only captures parental perceptions at one point in time and does not establish causal relationships. Purposive sampling limits generalizability beyond Tehsil Faisalabad, and the sample was restricted to mothers only. Furthermore, self-reported data may involve social desirability bias regarding sensitive topics such as family income and housing conditions.

Conclusion

The study concludes that health-related, socioeconomic and environmental factors play a significant role in shaping children's Health-Related Quality of Life (HRQoL). Mothers agreed that regular physical activity, healthy diet, good sleep, supportive socioeconomic conditions and safe environments had positive impacts on children's well-being. Improved educational outcomes such as school performance and learning were also linked to better HRQoL. The results underscore the need for strong family-school collaboration, as well as collaboration among health care providers and policymakers, to foster children's health and academic achievement.

Recommendations

Based on the findings of the study, the following recommendations are proposed:

- Promote regular physical activity, healthy nutrition, and adequate sleep among school-going children.
- Increase parental awareness of healthy lifestyle practices through community education programs.
- Ensure safe, clean, and child-friendly environments, including access to safe drinking water and play areas.
- Strengthen school-based health promotion programs to improve children's well-being and educational outcomes.

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