



PARENTAL AWARENESS TOWARDS CHILD HEALTH: A STUDY ON THE PARENTS OF HIGH SCHOOL STUDENTS AT KHULNA CITY CORPORATION IN BANGLADESH

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Abstract: Parents' awareness regarding child health has a significant influence on physical and psychological issues. This study aims to explore the implication of parents' behavior and attitude on the mental and physical health status of secondary education level children. A total of 130 respondents (either father or mother) is selected using the snowball sampling technique from Khulna City Corporation (KCC), Bangladesh. This study has applied Principal Component Analysis (PCA) and Ordinary Least Square (OLS) techniques for analyzing data. Results reveal that household structure (joint or nuclear) have significant implications in shaping the physical and mental health status of children. A poor level of parental awareness and care may lead children into depression and impede their mental growth. However, regression results postulate that parents' awareness and spending more time with children is significantly related to the physical and mental fitness of their children which in turn keeps them on the right track. This study has predominantly explored to what extent parents' awareness matters for improving child physical and mental health status. Thus, parents' awareness regarding child healthcare issues is indispensable.

Keywords: Parents' awareness; child; physical health; mental health; Khulna city

Introduction

For any nation, today's children are the most valuable resource because they will add value to the existing national output in terms of both quantitative and qualitative ways in the future. Moreover, children with sound health status is a prerequisite for a better future of any household. Alongside, parents' awareness regarding child's physical and psychological issues are indispensable for improving child's health outcomes (Saluja *et al.*, 2004; Bogels *et al.*, 2010). For adolescent child, a quality relationship between parent and child is highly influential to development outcomes (Smokowski *et al.*, 2015; Boldt *et al.*, 2020). Since child's are the best imitator hence, their behavior is shaped by observing the behavior of their parents, therefore; parenting behavior within the household and their awareness are considered amenable to ensure an affirmative impact on the health status of their child (Giles-Corti *et al.*, 2009; Haynes *et al.*, 2020). Taking care of child during the juvenile time period, assisting in combatting their depression in case of any failure, giving inspiration for good deeds, being cautious about children's food practices, encouraging children to take part in physical exercise, and being aware of child's accompany are the characteristics of ideal parenting that can have some influence over child's health status. Furthermore, the awareness of parents is essential for the child to stay on the right track, to reach their goals, and to maintain quality physical and mental health status.

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Meanwhile, ideal parenting can also influence children's participation in different socio-cultural activities (Erkelenz *et al.*, 2014).

In urban areas, generally, parents are involved in multifarious activities henceforth, they hardly spend time with their child which can have an adverse impact on child's physical and mental health status (Van Sluijs *et al.*, 2007; Korczak *et al.*, 2017; Bitsko *et al.*, 2018). Usually, anxiety and depression of a child happen because of family conflict, loneliness, social atmosphere, and circumstances. In Bangladesh, due to rural-urban migration, extended families are being replaced by nuclear families which may have some negative influence over child's mental health (Troiano *et al.*, 2008; Samad, 2015). In addition, if both father and mother are involved in income-generating activities, child's health may be adversely affected. Conversely, parents' care impacts positively on child's physical and mental growth (Mullick *et al.*, 1995; Verhoeven *et al.*, 2012; Kleppang *et al.*, 2018). Attachment theory suggests that bonding with parents helps children control their negative emotion, stress, and make them confident for exploring new ideas (Erkelenz *et al.*, 2014). Therefore, parents' should be aware of and focus on child's food practices and physical exercises for increasing child's immune system (Stallard, 1993; Durkin *et al.*, 1994; Harris *et al.*, 2009; McMahon *et al.*, 2017).

Literature shows that children face multifaceted health problems during their juvenile age, which change their behavior abruptly (Forehand *et al.*, 1984; Axford *et al.*, 2020). Even it can deviate child from the right path. Apparently, parents' awareness and carefulness can assist them to overcome their problems to a great extent (Salmon *et al.*, 2007; Philips *et al.*, 2014). Literature from different countries has explored the inter-linkages between parental awareness over children's physical health and mental status (Lobstein *et al.*, 2003; Hendaus *et al.*, 2020). However, very few literature have found from the Bangladesh perspective that dealt with the connection between parents' awareness regarding child's health and mental issue. Considering these research gaps in mind, the objective of this study is to examine the implication of parents' awareness on high school level children's mental and physical health status from the Khulna city of Bangladesh.

In this study, the authors estimate the magnitude of parents' awareness in the following grounds: firstly, authors emphasize the need of this study taking in concern of the findings from other literature. Sequentially, the authors present the study methods including sample selection, data collection, analytical tools used, and possible limitations in conducting this study. Afterward, results and possible discussions are illustrated in reference to the aligned studies conducted from different countries perspective. In doing so, policy options are described highlighting the best possible aspects of conducting this study in near future.

Materials and Methods

Sample Selection and Data Collection: Urbanization has provided opportunities as a push factor to migrate people from the village to city areas. Migration, in turn, compels parents to engage in several income-earning activities. In doing so, they presumably have less time to look after their children thereby the health and mental condition of their children is getting worsened day by day. Therefore, the authors are interested to find out the causal relation - how parental awareness affects child's health and mental status. Khulna City Corporation (KCC) area is targeted as the study area for convenience as the authors belong to this city, and most parts of this city are quite known to them. A total of 130 respondents (either father or mother) are chosen from each household using the snowball sampling technique. A semi-structured questionnaire was designed primarily for data collection, and a reconnaissance survey was conducted by the researchers for analyzing the feasibility of data collection. After finalizing the questionnaire, the data collectors firstly went to a parent in a household (either father or mother and in absence of any of them, revisit was administered to that household) for data collection and seek recommendations about the next household from where the

data collectors will visit for data collection. Hence, almost every household is willingly provided the required information (denial rate is almost 0), and this process was carried on throughout the data collection period. In this regard, no preferences were given to school names and areas. This study targets respondents who have high school-going children (precisely class IX and X) because, during this period, children usually face multifaceted physical and mental growth-related difficulties. If there exists more than one high school level child in a house, the authors gave priority to the elder one. Information is collected with a semi-structured questionnaire and door to door survey has been administered in this study within the timeframe (July 2019 – September 2019).

Operational Definition: In this section, the authors have briefly summarized some of the key variables used in this paper:

Parenting: Parenting is operationalized by listing the attitudes such as encouragement, consistency, praising, and modelling the activities of their child in case of nourishing their physical or mental health (Seay *et al.*, 2014). To nourish a child into a competent adult, parenting is associated with the emotional along with academic stability, achievement, and psychological improvement. It is a process of supporting the child's physical, mental, social as well as intellectual enlargement from their infancy to adulthood (Madden *et al.*, 2015). In this paper, parenting attitude and behavior relates to care for a child's food practice, juvenile time mental support, and allotting time with children.

Child's Physical Health: Physical health of a child consists of the capability to perform physical activities that are not hindered by any types of physical limitations like physical illness or pain of any body part. Specifically, this term points out the physical fitness of the child and the absence of diseases or infirmity (Philips *et al.*, 2014).

Child's Mental Health: Mental health of a child can be defined as the psychological well-being in which a child can realize his/her abilities, can continue his/her life productively and fruitfully, along with can cope with the normal stress of his/her academic as well as normal life (Herman *et al.*, 2005).

Juvenile Time Mental Problem: Mental problem of a child at early juvenile or adolescent time is quite common. It occurs in the forms of anxiety, disorders, depression and attention deficit, and psychiatric illness (Stephen *et al.*, 2000).

Healthy Eating Behavior: Healthy eating behavior encompasses the choice of food, the practice of having those foods which can fill up the demand for proper calorie in human body. It focuses on the healthy eating pattern that helps to manage the stomach and prevents diseases (Wansink, 2010).

Juvenile Time Food Care: When children are going through the infant age to the adult age, nutritious food supplements are needed to be delivered. It may include vitamins, water, fat, protein, minerals, and carbohydrates. Food chart during this time emancipates eating a wide variety of foods that provide nutrients to maintain sound health and be energetic (Ball *et al.*, 2007).

Econometric Specification: In this paper, previous research is extended by identifying parents' awareness over the child's physical and mental health status through constructing Principal Component Analysis (PCA). Aftermath, OLS technique has been applied to identify predictors affecting the physical and mental health indices of the children.

Construction of Principal Component Analysis (PCA): Physical and mental health indices are composed of ten and nine components respectively that are related to parents' awareness over physical and mental health status of children. Questions of each component are measured in

following the paper of Kahraman *et al.*, (2017), where answers of the questions are ranked as extremely less care (1), less care (2), neutral (3), moderately care (4), and highly cared (5). To maintain the consistency, reverse codes are applied to negatively worded questions and vice-versa. It is assumed that a higher value indicates better awareness of parents' over their child's physical and mental health status. Based on parents' response to the following components, eigen values are generated to explain cumulative variance (Annex Table A1 and A3), thereby, formulated components rotation matrix (Annex Table A2 and A4). In doing so, physical and mental health indices are constructed through PCA. Two stages of constructing physical and mental health indices are given below:

Stage 1: Physical health index has been formulated through incorporating parents' awareness about healthy eating behavior (Comp1), participation in extracurricular (Comp2) and physical activities (Comp3), junk food eating practice (Comp4), supplementary food intake (Comp5), children's foster (early) care (Comp6), juvenile time food care (Comp7), children's engagement on bad practice – drug use and smoking (Comp8), whether children face any chronic disease (Comp9), and malnutrition problem of children (Comp10). The higher index value of each component represents better awareness of parents'. The result indicates that the first four components comprise of eigen value greater than 1 and the fifth component nearly 1 which explains 74 percent of the cumulative variation (Annex Table A1).

Stage 2: The mental health index is constructed through incorporating parents' awareness indicators on mental health issue including juvenile time mental problem (Comp1), mindful parenting (Comp2), help in reducing anxiety and depression (Comp3), effect of family conflict on mental health (Comp4), care about children's company (Comp5), emotional disorder (Comp6), the pressure of tuition (Comp7), awareness of isolated and toxic relationship (Comp8), and children's behavioral change (Comp9). The higher indexing value of each component represents better awareness of parents' on their child mental health. Results exert that the first four components with eigenvalue>1 explain 70 per cent cumulative variance (Annex Table A3).

OLS Estimation: Ordinary Least Squares (OLS) regression is used to explore the implication of parents' awareness toward child's physical health status. Following equation1 is estimated to examine the implication of parents' awareness on child's physical health index (PHI).

$$Y_i = \beta_0 + \beta_1 X_i + \dots + \epsilon_i \quad (1)$$

Where,

Y_i = Physical Health Index (constructed through PCA score)

β_0 = Constant

X_i = Explanatory variables

ϵ_i = Error term

Another OLS technique is applied to explore the implication of parents' attitude toward children's mental health index (MHI) (equation 2).

$$Y_i = \beta_0 + \beta_1 X_i + \dots + \epsilon_i \quad (2)$$

Where,

Y_i = Mental Health Index (constructed through PCA score)

β_0 = Constant

X_i = Explanatory variables

ϵ_i = Error term

Since, this study has administered snowball sampling method to contact difficult-to-reach populations using face-to-face interviews, therefore; targeting of respondent is not a random process. Such a procedure would cause bias and likely to be limited in their generalizability (Lopes *et al.*, 1996). However, this sampling technique is seemed to be useful because of the referral made by participants withhold similar characteristics that are of research interest (Biernacki and Waldorf, 1981). On the other hand, owing to latent and continuous variable nature (Parents’ awareness over children health), authors are compelled to use PCA technique followed by linear regression (OLS) to make a statistical inference (Maravelakis, 2019). Side by side, authors postulate that findings of this study are more centric to given study area and cannot be generalized across countries. Thus further studies are recommended to assess whether findings of this study are robust in analytical statistics across different variables and populations on the absence of any bias.

Variable Identification: This study incorporates several variables to find out its impact on parents’ awareness in improving the physical and mental health status of the children. However, relevant predictors and their corresponding unit of measurements are presented in the following Table 1.

Table 1. Variables list

Variab	Description	Unit of Measurement
Y ₁	Physical Health Index (constructed through PCA score)	Index value
Y ₂	Mental Health Index (constructed through PCA score)	Index value
X ₁	Children’s BMI	(weight/height ²)
X ₂	Respondents Age	In Years
X ₃	Years of Schooling	In Years
X ₄	Religion	Muslim =1, Otherwise =0
X ₅	Family Type	Nuclear =1, Joint =0
X ₆	No. of Children in Family	In Number
X ₇	No. of Family Members	In Number
X ₈	Household Income	Monthly in BDT
X ₉	Household Expenditure	Monthly in BDT
X ₁₀	Children Sleeping Time	In Hour
X ₁₁	TV Watching Time	In Hour
X ₁₂	Parent’s Allotting Time for Children	In Hour
X ₁₃	Technological Device Using Time	In Hour
X ₁₄	Tuition Time	In Hour
X ₁₅	Taking Part in Extracurricular Activities	In Hour
X ₁₆	Pocket Money for Children	Monthly in BDT

Source: Authors Estimation, 2019

N.B.: (Y₁ and Y₂ or Y’s are denoted as dependent variables and X’s are explanatory variables)

Results

Descriptive Analysis : Following Table 2 exerts that the mean age of the respondent is 41 years with approximately 14 class years of schooling. It articulates that respondents (either father or mother) are both matured and educated enough to better look after their children. Similar findings are also observed in the studies conducted in other countries (Kumar, 2013; Erkelenz *et al.*, 2014). This study captures respondents both from nuclear and joint families and result postulates that joint family structure is now shrinking gradually with more emphasis on a nuclear family which further has a

significant effect on the physical and mental health status of children, these results are consistent with the study (Troiano *et al.*, 2008; Bansal *et al.*, 2014). It is apparent that the average monthly household income is US\$ 487 representing higher income in the joint family compared with the nuclear one. It is perceived that joint families with higher family members earn more income which might help them to fulfill all the desires of their children including taking healthy food chart, providing recreational facilities, and providing good tutor facilities, which is consistent with the study (Gershoff *et al.*, 2007). This statement can be linked with the result of average monthly household expenditure (US\$ 435) where expenditure for the joint family is higher compared with the nuclear family. It is witnessed that the value of BMI is quite high (above than normal 18.5-24.9) in joint families, where supposedly children get more attention from elders, representing obesity. Whereas this value is normal for the children belong to nuclear families where working parents' in present world are quite aware of providing healthy food to their children to maintain physical fitness. This result is consistent with the study (Bansal *et al.*, 2014).

Table 2. Descriptive statistics

Variables	Overall		Nuclear [N=80]	Joint [N=50]	Mean Diff. [(c) – (d)]
	Mean (a)	Std. Dev. (b)	Mean (c)	Mean (d)	
Respondent's age	40.93	6.66	40.98	40.00	0.98
Years of schooling	13.63	3.15	13.67	12.85	0.82
No. of children in family	2.02	0.78	2.02	2.14	0.13
Household monthly income	40907.69	12421.82	39943.09	57857.14	-17914.05***
Household monthly expenditure	36596.15	10450.53	35638.21	53428.57	-17790.36***
BMI of children	25.75	4.63	25.58	28.81	-3.23*
Children sleeping hour	7.30	1.21	7.28	7.71	-0.44
TV watching time	3.94	1.04	3.97	3.57	0.39
Parent's allotting hour for children	3.53	1.25	3.53	3.57	-0.04
Technological device using time	3.54	1.30	3.54	3.57	-0.03
Tuition time	4.20	1.07	4.22	3.86	0.37
Taking part in extracurricular activities	3.39	1.52	3.41	3.00	0.41
Pocket money for children	61.84	37.52	62.44	51.43	11.01
Children's mental health index	1.70	0.23	1.70	1.76	-0.07

N.B.: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors Estimation, 2019

However, such a result can be connected with providing pocket money for children. Result shows that children belong to the nuclear family get higher pocket money as compared with the joint family. Therefore; they are used to eat different junk food after their school. In addition, children are well aware that their parents' are working outside, so they have less time to look after how they have spent their pocket money. Consequently, it negatively impacts their health. A similar finding is observed in another study (Li *et al.*, 2017). Taking daily activities into concern – children on an average sleep 7 hours a day, use technological devices approximately 4 hours, and also participate in different extracurricular activities. In nuclear family, children spend comparatively more time in watching television along with participate more in extracurricular activities compared with joint families. However, parents' on an average spend 4 hours per day with their child especially talking

about daily whereabouts, making stories, or sometimes helping their child completing their daily tuition tasks. Interestingly, mental health index shows the higher value for joint family which is expected because in the absence of parents', children get an opportunity to spend time with other family members (Heinrich, 2014). Evidence shows that in many countries including Bangladesh, grandparents play a vital role in giving company with their grandchildren which may be one of the reasons for better mental health status of the children (Orb and Davey, 2005; Blundon, 2013; Kirby and Sanders, 2015; Samad, 2015).

OLS Estimation on Physical Health Index : Table 3 exhibits that predictors including religion, years of schooling, no. of family members, allotting time for children, and TV watching time have a significant association with endogenous variable i.e. physical health index (equation 1). Here, religion is taken as dummy form (Muslim =1, otherwise =0), and it exhibits a negative association ($p<0.1$) with the physical health index, which is consistent with the study of (Alves *et al.* 2010). Generally, due to religious sermon and despite awareness, sometimes Muslim parents deter their child participating in extracurricular activities or cocoon their children within the home imposing restriction on their free movement outside which is more common practice in the context of Bangladesh. Surprisingly, schooling years postulates negative impact on endogenous variable ($p<0.01$), however, it is quite obvious that other than education, inherently parents' better know how to look after their children in maintaining good health, such result is consistent with the study (Zarnowiecki *et al.* 2012; Sonogo *et al.* 2013). Sometimes in a highly qualified family, parents get less time to look after their children as they generally involve in responsible occupations, a similar finding observed in other study (Heinrich, 2014). Moreover, an increasing number of family members exerts negative impact on physical health ($p<0.05$). It is expected that, when family size increases, it will be difficult to look after every member along with children. Even, it will be more difficult for working parents' to manage family life and the situation gets worse when it comes to a question of joint family with large family members staying together. A similar notion is observed in other study (Kumar, 2013; Bansal *et al.*, 2014). As expected, allotting more time with children exhibits positive association with physical health index ($p<0.05$). This is due to the fact, parents' spend more time with children, therefore; better understand their needs and look after their physical health; which is consistent with the study of (Erkelenz *et al.*, 2014). TV watching time exerts a positive impact ($p<0.01$) in the sense that both parents' and school going children watch several campaigns such as regarding upbringing of children, mental and physical support to the adolescent children which remain helpful for better growth at the adolescent period, such result is consistent with (Harris *et al.*, 2009). Finally, the mental health index also exhibits a positive relationship with physical health index ($p<0.01$). When parents' spend more time with children, identify their needs, fulfill all their requirements, and aware of establishing peace environment within a household, therefore; mental condition becomes stable, and consequently, it improves the physical health condition of the children. The aforementioned results have been justified with the Variance Inflation Factor (VIF) test presented in Annex Table A5. It is found that there exist no multi-collinearity problem along with no omitted variable bias in this study.

OLS Estimation on Mental Health Index: Another OLS estimation (Equation 2) finds that exogenous variables - religion, allotting time for the child, and physical health index have a strong association with the dependent variable i.e., mental health index (Table 3). Here, religion exerts a positive impact on the mental health index ($p<0.1$), which is consistent with another study (Schieman *et al.*, 2013). From the interpretation of the physical health index, it is quite clear that Muslim parents' sometimes deter their children from going outside, therefore; they are highly conscious of their child's mental growth, and take efforts accordingly including providing company to them, care about providing healthy food intake along with enjoying indoor games with their children. Expectedly, while allotting more time with children it generally improves their mental health condition ($p<0.01$), such observation is consistent with different studies (Smokowski *et al.*, 2015; Ryan *et al.*, 2017).

Likewise, as interpreted in the earlier estimation, physical and mental health are complementary to each other, therefore, with improving physical health condition, it significantly improves mental health condition ($p < 0.01$). The similar finding is observed in other studies (Turney and Wildeman, 2016; Ohrnberger *et al.*, 2017). The aforementioned results are tested to avoid any bias, from Annex Table A5, it is witnessed that model has no multi-collinearity problem.

Table 3. Predictors affecting physical and mental health index

Variables	Physical Health Index (PHI)	Mental Health Index (MHI)
Age	0.01 (0.01)	0.00 (0.01)
Religion	-0.27* (0.15)	0.31* (0.16)
Years of Schooling	-0.07*** (0.02)	0.02 (0.03)
Family Type	0.86 (0.62)	-0.34 (0.70)
No. of Children	0.38 (0.28)	-0.09 (0.31)
No. of Family Members	-0.64** (0.28)	0.17 (0.31)
Allotting Time for Child	0.18** (0.07)	0.38*** (0.08)
TV Watching Time	0.49*** (0.07)	0.11 (0.09)
Physical Health Index		0.34*** (0.10)
Mental Health Index	0.27*** (0.08)	
Constant	3.23 (0.73)	-2.48 (0.85)
Observations	130	130
R-squared	0.48	0.35
Adjusted R-squared	0.44	0.31

N.B.: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ Source: Authors Estimation, 2019

Discussion

The focus on parental awareness as a point of intervention is imperative because parents' awareness in improving child health is related to their practices and behaviors (Okagaki and Luster, 2005). Table 2 enunciates that children who belong to joint family represent better physical and mental health than their nuclear counterpart as also observed in the study (Bogels *et al.*, 2010; Kumar, 2013). Inherently, joint families better take care of their children, spend time with them that bridge the gap between children and parent though they have less opportunity to share their feelings, emotions and affections with their parents' (Griffiths *et al.*, 2002). This finding exerts that in Bangladesh like other country, grandparents and other family members play a significant role in shaping children's physical and mental growth which is also found in other studies (Orb and Davey, 2005; Blundon, 2013; Kirby and Sanders, 2015; Samad, 2015). On the contrary, in case of the nuclear family, this problem is quite acute since other than parents', children do not have any other option to share their feelings and

emotions (Heinrich, 2014). The situation even gets worse when both father and mother are engaged in income generating activities and spend a major portion of time outside. Having no other works left to do, children are bound to indulge a large portion of their time using different technological devices (computer, mobile, and video games) which has negative impact both on their physical and mental health status. Similar finding is acknowledged in another study (Mustafaoglu *et al.*, 2018). Literature suggests that extensive use of electronic devices, especially mobile phone increases health risk for the adolescent children (Hysing, *et al.*, 2014). Moreover, according to study findings in nuclear family, children get higher pocket money and are used to eat different junk foods that deteriorate their health condition than the children belong to a joint family. Moreover, OLS estimation insights that larger family size significantly reduces the physical health index. One of the reasons is that with the increasing number of family members it becomes difficult to take care everyone intensively which is consistent with the study (Wu *et al.*, 2019). Similarly, physical health index is negatively associated with the religion. In the context of Bangladesh, Muslim parents' sometimes restrict their children in participating extracurricular activities or cocoon their children within home imposing restriction in their free movement outside. Years of schooling of the parents' is negatively associated with the physical health index, it may be due to the fact that increasing years of schooling escalates the probability of involvement of the parents in a responsible occupation that is why, they get less time to care for their children, which is consistent with the study (Sonego *et al.*, 2013). It is apparent that more time allocation by the parents with their children exhibits a significantly positive impact on physical health index. By spending more time with the children, parents better understand their physical needs and can accompany their children. Study finds that children who spend more time with their parents' are more likely to be physically and mentally active in their daily life (Zecevic *et al.*, 2010; Kardefelt-Winther, 2017). Similarly, watching different social and psychological programs especially parenting and upbringing-related programs on Television, parents become more aware and this may be one of the reasons for positive association with physical health index. Since watching television for long hour can affect weight and mood of a child, therefore, parents should be aware that children are watching age-appropriate programs on television. Lastly, mental health index is significantly and positively related to physical health index. This may be due to the fact that parents' spending more time with children, identifying their needs, fulfilling their requirements, and aware of establishing peace environment within household, similar justification is observed in another study (Zarnowiecki *et al.*, 2012). In the light of mental health index, religion exerts a positive relationship with the mental health index due to the restrictions imposed by the Muslim parents' to participate in extracurricular activities outside home but holding higher consciousness about their child's mental growth, and taking efforts accordingly for example providing company to them, careful about providing healthy food intake along with enjoying indoor games. These findings are consistent with the study (Alves *et al.*, 2010; Schieman *et al.*, 2013). The result suggests that with higher investment of time for children improves their mental health condition which is also statistically significant. According to the study findings, it is already said that both physical and mental indices are complementary to each other, therefore, with improving physical health condition, it also significantly improves mental health condition as also observed in the study of (Ohrnberger, 2017). Thus; family factors i.e. parent awareness including quality of support and care that parents' provide to their children can make a huge difference both in the physical and mental health status of a child (Ryan *et al.*, 2017).

Being a cross-sectional study, this study has all the limitations associated with small sample size, study design, econometric techniques used including difficulties in establishing a long run relationship among several predictors relevant to the study. Besides, relationship between variables not assessed in this study may differ across population in different regions. Therefore; longitudinal study with larger sample sizes along with area coverage are recommended as a further research option on this topic.

Conclusion

Parenting is regarded as one of the vital determinants of building social capital for any economy. Considering such an issue, this study tries to focus on the parents' awareness of the child's physical and mental health status from Khulna city of Bangladesh. Initially, this study compares child's physical and mental health in different family structures (nuclear and joint). Expectedly, children who belong to joint families have experienced good physical and mental health. Furthermore, this study incorporates PCA to construct parental awareness of physical and mental health indices. The econometric result demonstrates that spending more time with child has a positive influence on child's physical and mental health status. Moreover, physical and mental health are found to be complementary and significantly affect each other. In case of physical health index, parents' other than Muslim religion have better level of awareness to look after their child's physical and mental health issues. Though, education level of parents' do not find exclusively important, however, they are well aware of their child health either through watching several campaigns from broadcasting media or suggestion from elder family members. However, results emphasize that parental awareness is needed to safeguard their children from mental disorders and to attain physical fitness. Their unawareness can deviate a child from his/her right track such as drop-out from school, smoking and drug addiction, and bad company. However, the results should be considered with caution since this study is based on a very sample size to represent the respective population of Khulna City and the findings may not be generalized in other settings. At the policy level, this study suggests that parents' can be a beneficiary if they know what kind of care and to what extent are required for their children. Thus, this study contributes to a better understanding of the relationship between parental awareness on child physical and mental health.

Ethical Declaration

This is a self-financed study and does not receive any form of grant. The purpose of the study is solely concentrated on identifying parental awareness in improving child physical and mental health status which does not necessitate any form of a clinical trial on the human body. The authors are aware of not asking any type of sensitive questions to the respondents and their identity is not even disclosed in any stages throughout the study.

Conflict of Interest

None to declare

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Annex

Table A1. PCA for physical health index (PHI)

Component	Eigen value	Difference	Proportion	Cumulative Variance
Comp1	2.41	0.89	0.24	0.24
Comp2	1.51	0.12	0.15	0.39
Comp3	1.40	0.16	0.14	0.53
Comp4	1.25	0.38	0.12	0.66
Comp5	0.86	0.13	0.09	0.74
Comp6	0.73	0.03	0.07	0.82
Comp7	0.70	0.24	0.07	0.89
Comp8	0.46	0.10	0.05	0.93
Comp9	0.36	0.06	0.04	0.97
Comp10	0.30		0.03	1.00

Source: Authors Estimation, 2019

Table A2. Component rotation matrix for physical health index (PHI)

	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9	Comp10
Comp1	0.45	-0.08	0.40	-0.05	0.27	-0.07	0.23	0.34	0.54	0.26
Comp2	0.11	0.39	0.14	0.61	0.01	0.26	0.02	-0.28	-0.13	0.50
Comp3	-0.22	0.52	0.26	-0.25	0.56	0.08	0.28	-0.14	-0.10	-0.32
Comp4	-0.21	-0.19	0.03	0.00	0.27	0.70	-0.30	0.48	-0.12	0.06
Comp5	-0.20	-0.14	-0.34	0.25	-0.08	0.14	0.82	0.22	0.01	-0.03
Comp6	-0.13	0.46	-0.54	-0.22	0.13	-0.24	-0.12	0.33	0.08	0.45
Comp7	0.47	0.31	-0.06	-0.44	-0.46	0.46	0.15	0.01	-0.10	-0.04
Comp8	0.45	-0.01	-0.55	0.23	0.39	0.16	-0.14	-0.21	0.25	-0.36
Comp9	0.09	0.38	0.13	0.42	-0.23	-0.19	-0.14	0.55	-0.04	-0.47
Comp10	-0.43	0.18	0.02	0.02	-0.29	0.25	-0.11	-0.17	0.75	-0.10

Source: Authors Estimation, 2019

Table A3. PCA for mental health index (MHI)

Component	Eigenvalue	Difference	Proportion	Cumulative Variance
Comp1	2.32	0.45	0.26	0.26
Comp2	1.87	0.68	0.21	0.47
Comp3	1.19	0.30	0.13	0.60
Comp4	0.92	0.01	0.10	0.70
Comp5	0.87	0.13	0.10	0.80
Comp6	0.73	0.23	0.08	0.88
Comp7	0.50	.013	0.06	0.93
Comp8	0.38	0.16	0.04	0.98
Comp9	0.21		0.02	1.00

Source: Authors Estimation, 2019

Table A4. Component rotation matrix for mental health index (MHI)

	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9
Comp1	0.47	0.22	0.28	0.26	-0.09	0.06	0.46	0.52	0.26
Comp2	0.21	-0.43	-0.35	0.07	0.44	0.50	0.10	-0.13	0.39
Comp3	0.16	0.39	-0.45	0.46	0.03	0.30	-0.20	0.09	-0.49
Comp4	-0.03	0.44	-0.25	-0.76	0.00	0.31	0.11	0.19	0.05
Comp5	-0.27	0.08	0.38	0.00	0.68	0.11	0.34	0.01	-0.40
Comp6	0.52	0.27	-0.04	-0.13	0.49	-0.51	-0.26	-0.18	0.10
Comp7	-0.11	0.04	0.40	0.02	0.15	0.30	-0.72	0.36	0.21
Comp8	0.05	0.43	0.34	0.12	-0.15	0.34	0.04	-0.69	0.22
Comp9	-0.56	0.35	-0.29	0.30	0.18	-0.24	0.09	0.09	0.50

Source: Authors Estimation, 2019

Table A5. Variance inflation factor test

Predictors	Physical Health Index		Mental Health index	
	VIF	1/VIF	VIF	1/VIF
Age	1.19	0.84	1.19	0.84
Religion	1.18	0.85	1.18	0.85
Year of Schooling	1.15	0.87	1.23	0.81
Family Type	4.56	0.22	4.62	0.21
No. of Children	8.47	0.12	8.56	0.12
No. of Family Members	9.50	0.11	9.60	0.11
Allotting Time for Child	1.47	0.68	1.29	0.78
TV Watching Time	1.12	0.89	1.60	0.62
Physical Health Index	-	-	1.75	0.57
Mental Health Index	1.41	0.71	-	-
Mean VIF	4.24		4.42	

Source: Authors Estimation, 2019