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Mental Health of Parents of Autistic Children in Relation to Education, Income and Employment Status

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University of Rajshahi

MENTAL HEALTH OF PARENTS OF AUTISTIC CHILDREN IN RELATION TO EDUCATION, INCOME AND EMPLOYMENT STATUS

A Thesis submitted to the Department of Psychology, University of Rajshahi, Bangladesh, in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Psychology.

A Doctoral Dissertation

Submitted by

Kazi Imrul Kayesh
Reg. No: 1913057501
Session: 2018-2019

DEPARTMENT OF PSYCHOLOGY
FACULTY OF BIOLOGICAL SCIENCES
UNIVERSITY OF RAJSHAHI
RAJSHAHI-6205, BANGLADESH

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MARCH 2021


Dedicated
To
My Beloved Son
Kazi Abdullah Ridwan

DECLARATION

I hereby declare that the work embodied in this thesis entitled “Mental Health of Parents of Autistic Children in Relation to Education, Income and Employment Status” submitted to the Department of Psychology, University of Rajshahi, Bangladesh in partial fulfillment of the requirements for the award of the Degree of Doctor of Philosophy (PhD) in Psychology is an original and independent research work. This thesis has neither been submitted before, nor is it being simultaneously submitted elsewhere in any form at the same time in candidature for award of any degree.

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APPROVAL

This is to certify that **Kazi Imrul Kayesh** worked under our supervision as a PhD Fellow, Session: 2018-2019, Reg. No: 1913057501, Department of Psychology, Faculty of Biological Sciences, University of Rajshahi, Bangladesh. It is our great pleasure to forward his thesis entitled **"MENTAL HEALTH OF PARENTS OF AUTISTIC CHILDREN IN RELATION TO EDUCATION, INCOME AND EMPLOYMENT STATUS"** which is an original research carried out at the Department of Psychology, University of Rajshahi. This work has not been submitted so far in parts or in full, for the award of any degree or diploma at any other institute in home or abroad. It is mentioned that **Kazi Imrul Kayesh** has fulfilled all the requirements for submission of the thesis for the award of the degree of **Doctor of Philosophy** in Psychology.

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মনোবিজ্ঞান বিভাগের ২০১৮-২০১৯ শিক্ষাবর্ষের রেজিঃ নং ১৯১৩০৫৭৫০১ পিএইচ.ডি গবেষক **কাজী ইমরুল কায়েশ**-এর পিএইচ.ডি থিসিসটি রাজশাহী বিশ্ববিদ্যালয় কর্তৃক নির্ধারিত Plagiarism Software (iThenticate)-এর মাধ্যমে Similarly/Dissimilarity Check করা হলো। জীববিজ্ঞান অনুষদ-এর (সাবেক জীব ও ভূ-বিজ্ঞান অনুষদ) আরোপিত শর্তানুযায়ী Similarly-এর নির্ধারিত সর্বোচ্চহার (৩০%) গ্রহণযোগ্য মাত্রার মধ্যেই প্রতীয়মান। অনুষদ কর্তৃক গ্রহণযোগ্য সর্বোচ্চ মাত্রা ১৯% নির্ধারিত।

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Mental Health of Parents of Autistic Children in Relation to Education, Income and Employment Status

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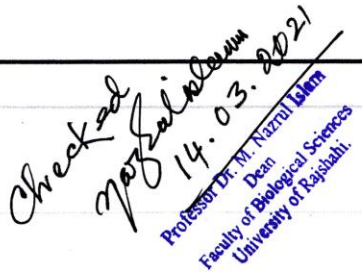

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The Author

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LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviations		Descriptions
APA	:	American Psychiatric Association
ASD	:	Autism Spectrum Disorder
BAI	:	Beck Anxiety Inventory
BDI	:	Beck Depression Inventory
DASS	:	Depression Anxiety and Stress Scale
DS	:	Down Syndrome
DSM	:	Diagnostic and Statistical Manual
IBS	:	Irritable Bowel Syndrome
LTS	:	Life Translation Scale
NGO	:	Non-Government Organization
NIMH	:	National Institute of Mental Health
PDD	:	Pervasive Developmental Disorder
SPAI	:	Social Phobia and Anxiety Inventory
SPSS	:	Statistical Package for Social Science
TD	:	Typically Developing

LIST OF SYMBOLS

Symbols		Descriptions
<	:	Less than
>	:	Greater than
”	:	Equal to
%	:	Percentages
***	:	Significant at the level of .001
**	:	Significant at the level of .01
*	:	Significant at the level of .05
α	:	Cronbach’s index of internal consistency
df	:	Degrees of freedom
p	:	Probability
r	:	Correlation Coefficients
R	:	Multiple Correlation
N	:	Number of Participants
M	:	Mean
F	:	F distribution, Fisher’s F ratio
SD	:	Standard Deviation
ANOVA	:	Analysis of Variance
MANOVA	:	Multivariate Analysis of Variance
Q-Q Plot	:	Quantile – quantile plot is a probability plot

ABSTRACT

Autism, a neurodevelopmental disorder in children, demands special attention from the parents and caregivers of the children with special needs than that of non-autistic children. It is always difficult for parents to ensure proper management of everything necessary for their children, and in case of autistic children, the efforts are higher and uniquely pressurizing, for they are to systemize their lives and adjust activities in special ways of both for their children's lives and of their own to avoid any possible psychological disturbances. The present study was designed to examine the mental health of parents of autistic children in relation to education, income, and employment status. The cross-sectional survey design was used to conduct the study upon a total of 534 parents (number of parents with autistic children = 284, number of parents with non-autistic children = 250), selected purposively from different districts of Rajshahi division, Bangladesh. Anxiety Measuring Questionnaire, Depression Measuring Questionnaire, an adapted version of Life Stress Measuring Questionnaire, and a Personal Information Form (PIF) were administered to collect data; all questionnaires were used in their respective Bangla versions. In the course of the research, six objectives were set to investigate the mental health of parents with autistic children. The results had revealed that there were significant differences in anxiety, depression, and stress between parents of the autistic children and the non-autistic children. Results stated that there was a significant difference between fathers and mothers of autistic children in case of anxiety, depression, and stress. In addition, the study reported that parents with postgraduate degrees have higher mental health than graduate and undergraduate parents and similarly, parents who have graduated are found having a

higher mental health than under graduate parents. The study also showed that in case of stress, parents from high income group expressed lower levels of stress than the parents from medium and low-income groups. Similarly, the parents from medium income group showed lower stress levels than the parents from low-income group. Furthermore, the results indicated that there were no significant differences in anxiety, depression, and stress in terms of the employment status of the parents of autistic children. Finally, the findings of this study alluded different interaction effects. For instance, an unemployed mother expressed more anxiety and depression than that of an employed mother. In addition, both postgraduate fathers and mothers expressed lower levels of depression than the graduate and undergraduate fathers and mothers. Likewise, graduate mothers showed lower depression levels than the undergraduate mothers. Furthermore, mothers who come from high and medium income groups expressed lower depression levels than the mothers of medium and low income groups respectively. Similarly, fathers who come from medium income group reported lower depression levels than those from the low-income group. A significant difference of depression is also found between postgraduate and graduate as well as postgraduate and undergraduate groups both of which are located in the low-income group. In case of low-income groups, postgraduate and graduate mothers expressed lower depression than graduate and undergraduate mothers. Similarly, both graduate and undergraduate fathers reported having less depression than graduate and undergraduate mothers. In case of medium income groups, postgraduate mothers and graduate fathers showed lower depression than graduate mothers. In terms of high-income groups, only postgraduate fathers reported having lower depression levels than that of undergraduate fathers. The results of this study also indicated that postgraduate and employed parents

from high income groups expressed lesser depression than the undergraduate parents from the high-income groups. Findings also revealed that postgraduate and unemployed parents from low-income group have expressed lower levels of depression than that of the undergraduate and unemployed parents from the low-income group. The implications of the findings have been discussed in the light of research evidences from the earlier researches.

Keywords: mental health, parents of autistic children, anxiety, depression, stress

CHAPTER ONE
INTRODUCTION

Mental Health of Parents of Autistic Children in Relation to Education, Income and Employment Status

It is a common wish of all for babies to be psychologically and intellectually sound, physically well and to have a beautiful life. Parents and grandparents desire a healthy new born, growing up to lead a healthful and merry life, overcoming the difficulties life itself has to offer (Hurlock, 1981). Unfortunately, this wish for all families does not come true. A large number of parents have children with neurodevelopmental disorders (e.g. Autism spectrum disorder, intellectual disabilities, specific learning disabilities, motor disorders, attention-deficit/hyperactivity disorders, etc.). Parents are primarily the most significant characters in their children's lives. Their attitude, conduct and management are of high importance for the development of their children's mental health (Muhammad & Mishu, 2016). Findings of behavioral observations revealed that the parents of special children are experiencing many obstacles in rearing their children. Empirical research documented that parents of autistic children are usually exposed to more mental health problems than that of the parents with non-autistic children (Muhammad, 2015). The present researcher feels that some demographic variables might be related to the mental health of parents with autistic children. In this study, therefore, the researcher attempted to explore the mental health problems and examine whether education, income, and employment status have any impact on the mental health of these parents. Hence, the purpose of this chapter is to highlight the nature and operational definitions of autism and mental health and also to provide literature review supporting the present study.

1.1 Autism Spectrum Disorder

As a neurodevelopmental disorder, autism is characterized by problems such as: social interaction and communication difficulties, repetitive and restricted behaviors, etc. Autism usually appears during infancy or childhood (Landa, 2008). The signs of autism often develop gradually but a number of children with autistic problems reach their developmental milestones firstly at a normal pace and then deteriorate (Stefanatos, 2008).

Autism is mainly influenced by a combination of genetic as well as environmental factors (Chaste & Leboyer, 2012). The risk factors of autism include certain infections during pregnancy like valproic acid and rubella, cocaine, or alcohol abuse (Ornoy et al., 2015). Some environmental factors also contribute to autism such as the vaccine hypotheses, which have been contradicted (Rutter, 2005). In accordance with DSM-5, autism is considered as an autism spectrum disorder (ASD), accompanied by Asperger syndrome, which is less severe, and considered as a pervasive developmental disorder (PDD) which is not otherwise specified (PDD-NOS) (Johnson & Myers, 2007).

1.1.1 Diagnostic Criteria of Autism Spectrum Disorder

DSM-5 has twenty major categories of mental disorders, neurodevelopmental disorders are one of them. ASD is included in the neurodevelopmental disorder categories. There are many diagnostic criteria for ASD. These are as follows:

A. In multiple contexts, there is a persistent and significant gap in social interaction and communication which are exhibited in the following:

1. Deficits in social-emotional reciprocity that represents failure of usual back-and-forth conversations as well as unusual social approach to declined sharing of interests, affect or emotions.

2. Deficits in nonverbal communication, ranging from lower assimilation of nonverbal and verbal communication to abnormalities in body language, eye contact and lack of use and understanding of gestures, as well as facial expressions.
3. Lacking the capacities of developing, maintaining, and understanding relationships, ranging from adjustment problem to problem in establishing friendly relationships to the lack of interest in peers.

B. Confined, and repetitive forms of behavior, activities that are determined by at least two of the following:

1. Repetitive motor movements, use of speech or objects such as echolalia, simple motor stereotypies, difficulties in lining up toys or flipping objects.
2. Persistent in sameness, strictly maintaining routines, for instance, taking the same food every day, having complications in small transitions, reacting in high distress to simple, natural or necessary changes, rigidity in thinking, etc.
3. Highly controlled and rigid interests that displays of abnormally attachment issues.
4. High or low sensory input to the environment such as apparent indifference to pain, negative reaction to precise sounds, visual attraction with movement and lights.

C. Autistic symptoms must exist in the initial period of life but may not become totally apparent until social expectations surpass limited abilities.

D. The symptoms of autism are responsible for the deterioration in social, occupational as well as other significant domains of child life.

E. These deficiencies are not well clarified by the intellectual developmental disorder. But intellectual disability and autism can occur at the same time.

1.2 Mental Health

Mental health is very important for understanding human behavior. Mental health influences physical, social and behavioral aspects of our lives. Different organizations and researchers defined mental health in various ways as mentioned below:

According to the World Health Organization (WHO, 2011) "Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and can make a contribution to his or her community."

Legg (2020) defined "Mental health refers to our cognitive, behavioral, and emotional well-being. It is all about how we think, feel, and behave. The term mental health is sometimes used to mean an absence of a mental disorder."

According to the U.S. Surgeon General (2000), "Mental health is the successful performance of the mental function, resulting in productive activities, fulfilling relationships with other people, and providing the ability to adapt to change and cope with adversity".

Anxiety, depression, stress, distress, etc. are important domains of mental health. In this study, examining mental health means the observing the levels of anxiety, depression, and stress that the respondents have experienced. It is pertinent here to discuss the nature of anxiety, depression, and stress.

1.3 Anxiety

Numerous researchers and different organizations across the world have provided many definitions of anxiety. For instance, Seligman et al. (2001) defined anxiety as "an emotion characterized by an unpleasant state of inner turmoil, often

along with nervous behavior, such as somatic complaints, pacing back and forth, and rumination." Similarly, Davison and Gerald (2008) proclaimed that "Anxiety is the subjectively unpleasant feelings of dread over anticipated events, such as the feeling of imminent death." According to the American Psychiatric Association (2013) "Anxiety is different from fear, which is a response to a real or perceived immediate threat, whereas anxiety is the expectation of future threats." Bouras and Holt (2007) has defined anxiety as "a feeling of uneasiness and worry, usually generalized and unfocused as an overreaction to a situation that is only subjectively seen as frightening". American Psychiatric Association (2013) also defined anxiety as "often accompanied by muscular tension, restlessness, fatigue, and problems in concentration. Anxiety can be appropriate, but when experienced regularly the individual may suffer from an anxiety disorder."

People facing anxiety may withdraw from conditions that have triggered anxiety in the past (Barker, 2003). There are different kinds of anxiety. Existential anxiety can occur when a person encounters an existential crisis, pessimistic feelings, and angst. People can also encounter somatic anxiety, mathematical anxiety, and test anxiety. Stranger anxiety and social anxiety occur when people are worried about strangers. Moreover, anxiety can increase other mental illnesses such as panic disorder and obsessive-compulsive disorder and it may also manifest physical symptoms like irritable bowel syndrome, fatigue, rapid or slow breathing, etc. The initial step of the management of anxiety symptoms is to assess the probable presence of medical causes and decide the treatment plans (Testa et al., 2013; World Health Organization., 2009). Anxiety may be an underlying condition of particular organic diseases as well as being a consequence or manifestation of particular medical disorders (Testa et al., 2013; World Health Organization., 2009).

1.4 Depression

Depression is one of the common and serious mental disorders. It has negative consequences on our health, economic, and social life. According to WHO (2011), "Depression is a disorder that is characterized by sadness, feelings of guilt or low self-worth, loss of interest or pleasure, appetite, decreased energy, and poor concentration." Feelings and symptoms of depression can be chronic or acute. Depression impairs an individual's abilities that can hamper our daily lives. Extreme levels of depression is one of the prime accounts of suicide and it is responsible for approximately 8,50,000 suicides each year (WHO, 2011). Depression influences people of every age, gender, ethnicity who are exposed to inconvenient healthcare systems as well as disability costs (NIMH, 2011).

Depressed mood is characterized by different sorts of psychiatric syndromes for instance major depressive disorder as well as dysthymia. Depression or a depressed mood may also be a normal and temporary 'result/a symptom' of some bodily ailments as well as a reaction to medical treatments, drugs and bereavements. DSM diagnosis differentiates habitual depressive symptoms from an episode of depression. Different difficulties in childhood such as neglect, bereavement, mental abuse, sexual abuse, physical abuse, as well as unequal parental treatment of siblings potentially contribute to depression in adulthood (Heim et al., 2008; Pillemer et al., 2010).

1.5 Stress

Simandan (2010) defined stress "as a feeling of strain and pressure as well as it is also one kind of psychological pain." Lower amounts of stress may be beneficial, desired as well as healthy. Positive stress enhances athletic performance, motivation, adaptation, and response to the environment. On the other hand, high amounts of stress

tend to result into bodily harm, cause ulcers, heart attacks, increases the risk of strokes, and mental illnesses such as depression (Sapolsky, 2004).

Stress can also happen due to external influences that concerns the surrounding environment (Jones et al., 2001). Stress may also happen due to an individual's anxiety experiences, negative emotions such as discomfort, pressure, etc. and other internal issues (Simandan, 2010). It may be threatening when an individual's resources are limited to meet the demands to avert or control the levels of stress (Folkman, 2013). A very much disregarded side of stress is its positive adaptations (Gibbons, 2012).

Selye (1983) proclaimed that there are four kinds of stress which are distress, eustress, hypo stress, and hyper stress. The overall purpose of stress management is to retain the stability of these types of stress as much as possible. The specific purpose also would be to retain stability between hypo stress and hyper stress and have as much eustress as possible (Selye, 1983). Stress is an important part of a fruitful lifestyle because a life full of activities shall always put one through the hardships and difficulties associated to experiences and events. There is a link between stress and illness (Simandan, 2010; Folkman, 2013). The theories of stress–illness link addressed that both acute and chronic stress are responsible for illnesses (Schneiderman et al., 2005). According to these theories, acute and chronic stress can cause behavioral and physical changes. Stress can lead to behavioral changes such as smoking, alcohol abuse, eating habits as well as the loss of physical activity. Physiological changes such as changes in immunological function, as well as sympathetic activation or hypothalamic pituitary adrenocorticoid activation can also be caused by stress (Herbert & Cohen, 1993). Nonetheless, there is much inconsistency in understanding the connections between stress and illness (Ogden, 2007).

1.6 Factors Affecting Mental Health of Parents of ASD

Research indicated that several factors contributed to the mental health of the parents of autistic children such as the severity of autism symptoms, social support, financial difficulties, parents' understanding and perceptions towards ASD, parents' anxiety and worries about their children's future and so on (Ilias et al., 2016). These contributing factors are discussed in the following sections.

1.6.1 The Severity of Autism Symptoms

A vast literature showed that the severity of autism symptoms increased the stress levels of the parents of autistic children (Athari et al., 2013; Charnsil & Bathia, 2010; Ilias et al., 2016; Nikmat et al., 2008; Wisessathorn et al., 2013). Lai et al. (2015) conducted a study with Singaporean samples and reported that greater severity of autistic symptoms is correlated to higher parental stress. In another study, Moh and Magiati (2012) indicated that perceptions of ASD severity, specifically the perceptions of mothers, were the important predictors that influenced the stress levels of parents of autistic children.

The perception of autism severity was negatively related to the quality of life of the parents (Wisessathorn et al., 2013) as well as parental satisfaction during the diagnostic process (Moh & Magiati, 2012).

1.6.2 Social Support

Several findings reported that social support decreased the anxiety, depression, and stress levels of the parents with autistic children (Callos, 2012; Chong & Kua, 2016; Foo et al., 2014; Ha et al., 2014; Moh & Magiati, 2012; Roffeei et al., 2015; Santoso et al., 2015; Wahyuni, 2013; Xue et al., 2014). Social support is achieved from

different sources such as immediate family members, schools, families of other children with ASD, professionals, and/or extended family members (e.g., Chong & Kua, 2016; Santoso et al., 2015; Xue et al., 2014).

Research findings revealed that spousal relationships were found to be a significant source of social support (Chong & Kua, 2016; Foo et al., 2014; Santoso et al., 2015) and this was identified as a cross-cultural factor that significantly influenced psychological distress as well as parenting stress among parents of children with ASD in Malaysia and China (Yeo & Lu, 2012). Various studies also indicated that professionals play a critical role that supports the parents of autistic children (Chong & Kua, 2016; Resurreccion, 2013; Santoso et al., 2015; Xue et al., 2014).

1.6.3 Financial Problem

Financial problem is a significant factor that influences the stress levels of parents of children with ASD (Athari et al., 2013; Ha et al., 2014; Quilendrino et al., 2015; Vetrayan et al., 2013; Wahyuni, 2013). Financial income, which is opposed to economic difficulties, was found to be negatively correlating with levels of hopelessness (Vetrayan et al., 2013) as well as levels of parenting stress and depression (Athari et al., 2013) among parents of autistic children.

1.6.4 Parents' Understanding and Perception toward ASD

Another important factor that influences the parenting stress experienced is parents' understanding and perceptions toward autism spectrum disorder. More precisely, emotional acceptance and understanding (Chong & Kua, 2016; Ilias et al., 2016; Wahyuni, 2013; Xue et al., 2014), positive beliefs/optimism (Chong & Kua, 2016; Wisessathorn et al., 2013), sense of coherence (Siah & Tan, 2015, 2016),

adaptability (Ilias et al., 2016; Wahyuni, 2013) and cognitive reframing (Siah & Tan, 2016) toward having a child with ASD served as coping strategies for parents of autistic children.

On the other hand, negative outlooks about their children's diagnosis have also been reported. For instance, Rahman et al. (2012) reported that fathers are found to believe that their unhealthy lifestyles, mental or physiological conditions are major predicators to their children's diagnosis of autism.

1.6.5 Parents' Worries and Anxiety about their Child's Future

Several findings indicated that parents' worries and anxiety regarding their children's future (who is diagnosed with ASD) to be one of the important factors that influence parental stress (Ha et al., 2014; Ilias et al., 2016; Quilendrino et al., 2015). The parental anxieties include the children's education (Ilias et al., 2016; Tait & Mundia, 2012), career and job prospects (Ilias et al., 2016), and worries over finding care for their children in their mature age (Quilendrino et al., 2015). On the contrary, Santoso et al. (2015) indicated that if mothers were to be optimistic about their children's future, it increased resilience in the mothers.

1.6.6 Religious Belief

Researches showed that religious beliefs were seen in the role of being a coping strategy that assists parents to accept and raise children with ASD (e.g., Chong & Kua, 2016; Ilias et al., 2016; Resurreccion, 2013; Santoso et al., 2015; Tait & Mundia, 2012; Wahyuni, 2013). For instance, parents acknowledge their children as gifts from God, despite their ASD diagnosis (e.g., Tait & Mundia, 2012; Ting & Chuah, 2010), and they have found comfort through prayers (e.g., Ilias et al., 2016; Santoso et al., 2015; Wahyuni, 2013) and/or by reading holy books (e.g., Ilias et al., 2016; Resurreccion, 2013) and/or different spiritual and soulful activities (e.g., Ilias et al., 2016).

1.7 Theories of Mental Health

Conceptual aspects or theoretical viewpoints are important requirements of any scientific research. From that point of view, we discussed different theoretical explanations that help us to conceptualize the mental health of parents with autistic children. These theories are discussed in these sections.

1.7.1 Telic Theories

Telic or endpoint theories addressed that mental satisfaction is fulfilled when a need or goal is reached. For instance, Wilson (1960) proposed that fulfillment of needs or demands are the sources of mental satisfactions whereas unfulfilled needs are the result into mental dissatisfactions. Many philosophers were worried about the questions associated with Telic theories. For instance, they questioned whether mental satisfaction is obtained by satisfying one's desires or by suppressing them. Where hedonistic philosophers have suggested the contentment of desires, in contrast, ascetics have suggested the extinction of desires. So, the debate and curiosities around desire is inconclusive and much controversial. Seitovsky (1976) proposed that struggling to obtain goals or being on the way to goals is more satisfying than that of the real fulfillment of the goals.

Alternative Telic theories are also important to describe here. For example, according to need theories, there are certain learned needs where a person tries to fulfill. The individuals may or may not be conscious of these needs. In contrast, according to goal theories, individuals are conscious about certain goals and they are found making conscious efforts to meet them (Michalos, 1980).

Needs may be universal that is given by Maslow (1943), whereas needs may be individual that is proposed by Murray (1938). Maslow (1943) proposed a need

hierarchy theory. This theory mentioned that mental satisfaction was achieved through meeting needs at a particular level. But it was found that the evidences regarding Maslow's theory were not encouraging (Lawler & Sutle, 1972; Wahba & Bridwell, 1976). In contrast, Murray (1938) had said that personal needs vary from one individual to another. Diener et al. (1984, 1986) showed that individuals experience mental satisfaction when specific needs are gained. For instance, when people have high mental satisfaction, they perceive their goals as more significant and the likelihood of succeeding in these goals are also higher (Emmons, 1986). In contrast, when people have low mental satisfaction, they perceive their goals as less significant and the likelihood of their success is also lower (Emmons & King, 1988).

Individual situational affordance as well as their strategies contributes to their achievement of goals (Cantor, 1994; Cantor et al. 1987; Norem & Cantor, 1986; Spencer & Norem, 1996). For example, Norem and Illdingworth (1993) concluded that when individuals have high strategic optimism, they performed their tasks better despite of any adversities. Similarly, Cantor and Harlow (1994) documented that the consistency between life activities and social contexts was associated with positive emotional experiences.

Different schools of thoughts and researchers have identified different universal human needs, such as, self-approval, efficacy, as well as understanding. If the mentioned needs are truly universal, then their fulfillment should associate with mental satisfaction in all cultures. Reich and Zautra (1981) addressed that efficacy is the important basis of positive affect; whereas Csikszentmihalyi and Figurski (1982) showed that the source of positive affect is voluntariness. Likewise, positive affect requires a certain level of arousal. Scitovsky (1976) also concluded similarly that certain levels of stimulation essentially enhance positive affect.

Desires and goals are usually thought to be more concerned with consciousness than needs. When individuals obtain important goals, they must have experience of feeling happy. Here one question is important that is either goal attainment fosters us to the long-term difference in mental health or short-term mood rises. Chekola (1975) addressed that continuous attainment of one's life plan, as well as integrated set of individual goals, contribute to our mental satisfaction. So, from that point of view, we mentioned that in accordance with the life plan approach, mental satisfaction has two very important factors which are a) harmonious integration of one's goals and b) attainment of these goals.

Palys and Little (1983) concluded that individuals have a personal project which transforms into total project. Such type of individuals measured the project and have reported that the dissatisfied individuals tend to aim at visions that makes long term rewards and this mindset itself supplies momentary enjoyment in contrast with a good deal of obstacles. On the other hand, comparatively satisfied people are also seen to have projects which were less problematic but more pleasurable, and at the same time, it is more significant for them.

In telic theories, many things can inhibit mental satisfaction. Firstly, the person may expect goals that convey short-term satisfaction but at the same time, it has negative outcomes, because they inhibit with other goals. Secondly, there is a conflict between an individual's desires and goals and if they were to be in conflict, then identification and integration of both becomes because most of our desires and needs are also thought to be unconscious. Thirdly, the person could be bereaved of mental satisfaction because they had no desires or goals. Finally, individuals may be incapable to achieve their goals because of their incapacities or high aim targets.

There are various weaknesses of telic theories. First of all, their formulation is not specific and not so tested. Many of these approaches are not practicable. Goals and needs are sometimes illustrated based is essential, and the longitudinal methods could help to determine whether or not reaching such types of goals enhance mental satisfaction. For example, Gordon (1975) differentiates the significance of different types of needs and goals and their fulfillment is closely associated with the levels of mental satisfaction.

Person's needs, cultural goals as well as their developmental stages contribute to their original goals (Cantor & Kihlstrom, 1989). For instance, in the USA, academic performances, as well as intimate relationships, are the symbol of their life task, while social engagement is the significant life-oriented goal for the comparatively older generations (Cantor & Harlow, 1994). Throughout our life, our activities change. For instance, in the college days two of the common and primary goals are to perform well academically and perhaps develop and maintain a healthy relationship with a partner. These play an important role in achieving ultimate satisfaction (Emmons & Diener, 1985). In contrast, job satisfaction was the important forecaster among people who are employed and a healthy social involvement is an important contributor to having a content life in case of the elderlies (Harlow & cantor, 1996).

Based on the previous discussion, it is mentionable that the contents of desires or goals change and get prioritized in case of effectiveness in producing mental satisfaction. So, it is clear that some goals may be more helpful than others. For example, Veenhoven (1991) addressed that goals associated with universal human needs are those that yield long term mental satisfaction. From the perspective of this approach, some goals do not produce mental satisfaction because they depend on artificial desires. Conversely, in accordance with this theory, biological needs are the predictor of mental satisfaction.

1.7.2 Economic theory

In accordance with the economic theory, higher levels of mental health or mental satisfaction are associated with higher levels of income. Income and mental health are positively correlated. So, when income level gets increased, mental health reaches satisfaction, and in contrast, lowers income level results into ill mental health. For instance, Easterlin (1974) proposed that the effects of income on mental health can be determined by standards. This standard will change over time because of a person's social comparisons, as well as expectations, are influenced by this aspect. So, it is important here to describe that any individual's present and earlier economic conditions are closely related to the individual's mental wellness (Meadow et al., 1992).

In addition, Venhoveen (1988, 1991) indicated that there was a relationship between an individual's mental health and their fulfillment of basic needs. Individuals who have higher incomes meet their basic needs such as food, health, shelter, etc. Such type of needs fosters better mental satisfaction.

Brickman et al. (1978) reported that on the subject of adjusting to positive and negative events, a person's emotional capacity is essentially important. So, a person's higher adjustment capacities are related to higher quality of mental health, even in the conditions of low-income levels.

In accordance with the aspiration theory, an individual's satisfied desire ratio is associated with his or her levels of satisfaction or dissatisfaction that he or she experiences. People who think that their desires are fulfilled tend to have enhanced mental satisfaction than that of those who believe to be burdened with unfulfilled desires, regardless of income levels. According to this theory, mental health is not only related to the degree of satisfying needs but also related to a person's integrated desires and both situations are associated with a person's income level.

1.7.3 Theories of coping

According to the coping theories, individuals who are healthy by all means adapt innovative, efficient and intuitive ways to cope and surpass problematic situations. In contrast, unhealthy people cope with the situation in harmful ways. For instance, healthy or happy individuals incline to problem-focused coping strategies, such as they think about their situation in a positive way, encounter the situation directly and seek information from other people to solve through the situation. In contrast, unhappy individuals give more focus on emotional ways of coping such as they involve more in fantasy, blame to other people and avoid the situation in itself (McCrae & Costa, 1986).

An individual's control of thought contributes to his/her mental wellness. For instance, researches have indicated that religious people are happier than those who are non-religious (Ellison, 1991; Myers, 1992; Pollner, 1989). Empirical evidences also indicated that mental wellness is related to an individual's concentration on fulfilling desires and goals rather than being focused on seeking attention. This finding also reported that optimistic thinking enhanced individual mental health than pessimistic thinking (Scheier & Carver, 1993). But it is not definitive that these cognitive factors are associated with mental health because of some other third variable, for example temperament, contribute in this aspect. In contrast, it is also mentionable that cognitions have a long-term influence on an individual's mental well-being.

1.7.4 Social Comparison Theory

Easterlin (1974) reported that different nations of similar status quo share similarities in collective mental health because the individuals as citizens cannot be disassociated from the collective or national attributes and/or limitations, for example,

collective or gross income. In this sense, people from high-income groups show signs of better mental health than the people from lower income groups. In accordance with the social comparison theory, average people of any nation belong in the neutral position regarding mental health, where half of the individuals belong in the below average and the rest of the people belong in the above average groups under this context. For instance, Diener and Diener (1996) documented that most of the individuals are above average in terms of mental health perspectives. Researchers said that in the United States, around 80% of people have stated having positive levels of mental satisfaction. The conditions of mental health are observed in many different domains of human life. For instance, in the family life domain, the majority of the individuals are usually found having higher mental satisfaction. One point that is important here to discuss is that even the people with chronic mental illnesses and disabilities who reportedly experience healthier mental conditions are above neutral. This finding is also similar in the industrialized countries. We do not know till now that why the majority of the individuals of particular nations showed positive mental satisfaction. This is occurring because most of the people are found leading their lives with positive attitudes in positive atmospheres as well as having their biological factors contributing for such conditions to exist. This finding is in contrast to Easterlin's work. One finding that is also contradicts Easterlin's work is that nations do not diverge in expected ways of mental satisfaction. Diener et al. (1993) revealed that in the social comparison perspective, individuals with the same income level who live either in the poor or healthy community do not differ from each other in terms of mental satisfaction. This perspective works the same in case of the medium-income group. According to social comparison theory, social comparison does not inevitably contribute to mental satisfaction when someone is around others who are discovered as inferiors. In contrast,

this data is consistent with the coping model of social comparison where individuals selectively indicate towards someone who is comparable to them (Taylor et al. 1983; Will, 1981; Wood et al. 1985). In cases it is seen that individuals create imaginary figures that resemble those people that the individuals compare themselves with in order to obtain their personal goals. Here people take help of different coping strategies, for instance, believing that encountering others who are considerably of lesser qualities or subordinates and are inferiors to them helps to get motivated to rejuvenate their moods, and this enhances mental satisfaction. It is indeed an oversimplified and inconsistent idea that individuals can always effectively enhance mental satisfaction by comparing themselves with other people who are either superior or inferior to them. So, from the above discussion, it is mentionable that an one's mental satisfaction does not entirely depend on the basis of immediate comparison of those who are around us.

1.7.5 Context Theories

Veenhoven (1991) addressed that mental satisfaction is occurred by the fulfillment of individual as well as universal needs. He had mentioned that an individual's satisfaction is quite dependent upon the fulfillment of fundamental needs such as warmth, hunger, thirst, shelter, etc. On the other hand, context theories documented that an individual's mental health is determined by the contexts or circumstances where the individual is located. The relevant context is found varying from one theory to another. For instance, in adaptation theories, an individual's past life is defined as a relevant context. In contrast, according to the social comparison theory, comparable individuals are identified as relevant contexts. Some other factors are also identified as context like an individual's imaginations and his conceived ideas. Lastly, in the goal approach, an individual's conscious aim is considered as a context. In all the

above discussed context models, changeable factors play an important role rather than biological universals and this is an important determinant for the nature and extent of life experiences of the parents with autistic children.

1.7.6 Judgment Theories

Different theories claim that the extent of mental satisfaction can be understood by comparing actual/real experiences of an individual with what the individual conceives as standard. When the actual or real situation is assessed as similar as or even better than the conceived ideal/standard, mental satisfaction shall occur. In terms of satisfaction, such comparisons may happen consciously. In contrast, in terms of affect, comparisons with standards/ideals might happen unconsciously. Judgment theories only forecast the magnitude of affect rather than what events will be negative or positive. On the basis of standard, judgment theories are different from other theories. For instance, in social comparison theories, someone considers other people as a standard. When individuals discover themselves in better conditions than the individuals, they compare themselves with, they are found to be mentally satisfied (Carp & Carp, 1982; Emmons et al. 1983; Michalos, 1980). In contrast, an individual's past life is considered as a standard in both theories of adaptation (Brickman et al. 1978) and range frequency (Parducci, 1968, 1982). When a person's present situation surpasses to better terms than previous situations, mental satisfaction shall take place. People may become aware of goals that can elevate mental satisfaction in other ways. For instance, this may happen out of one’s own concept or awareness of self or by the dictations or advices from people of high significance to that individual.

Though the term standard is used in different ways in various theories, in each theory they are found as the foundation of judgment. For example, the closer person is considered as a standard because of their salience. In contrast, Dermer et al. (1979)

reported that even people who are not so close can be used as a standard though they are salient. Seidman and Rapkin (1983) documented that social comparison play a significant role in mental health. Similarly, Will (1981) concluded that mental satisfaction will increase when individuals compare themselves with the less fortunate people. In addition, Kearl (1981–1982) reported that when individuals think of the people who are situated in poorer environments than that of their own, this knowledge contributes to increase the possibility of enhancing mental wellbeing. Similarly, Easterlin (1974) documented that when individuals discover themselves belonging to a higher income level than that of the compared, they experience increase in mental satisfaction. Social comparison theories are not free from weaknesses, for example, it cannot determine exactly when individuals feel the need to compare her/his self with others. Freedman mentioned that social comparison theories are not significant for some factors, for instance, gender. From this perspective, individuals have unique values. In contrast, Emmons et al. (1983) reported that social comparison does play a significant role in the subject of mental health.

Good and bad events can cause one to be mentally satisfied and dissatisfied, accordingly. But in the course of time, both natures of events eventually loses their capacities to evoke either or both of the mental condition and it is only because of one's ability to cope or adapt with situations. The same thing occurs in bad events. A person's own experience is used as a standard in adaptation theory. So, in accordance to this theory, when a person's present situation is assessed as better than the standard, it produces mental satisfaction. In contrast, when good events will continually occur, adaptation will occur as well. Similarly, when the standard will be consistent with the new events, mental satisfaction shall rise (Brickman & Campbell, 1971). Adaptation theory also suggests that when individuals adjust to the events experienced and if a

recent change takes place, this may contribute to a person's mental satisfaction or dissatisfaction. This theory further reported that an individual's changes in income level play a significant role in mental satisfaction.

Brickman et al. (1978) documented that quadriplegic patients and lottery winners are no more mentally satisfied than that of the controlled. Similarly, Wortman and Silver (1982) confirmed the above evidence through longitudinal studies. They concluded that spinal cord injured patients were unhappy after their accidents. But due to one's capacities of adaptations to these events, individuals suffering from such conditions can gradually develop positivity towards life which enhances the likelihood of gradual recovery. Feinman (1978) and Cameron (1974) stated that other handicapped individuals are mentally satisfied than that of their counterparts. But such type of situation occurs based on adaptation, time factor, and the condition itself. Besides these factors, other factors play similar roles like psychological factors that influence mental health, for instance, an individual's health conditions are major factors that contribute to one's mental satisfaction.

On the basis of the laboratory model of human judgment, Parducci (1968) introduced the provocative theory. The range-frequency model addressed a specific standard contrasting with which all incoming events are evaluated. This model has the significant application of those individuals who belong in the skewed distribution of the events. This theory also indicated that when individuals belong in the negatively skewed distribution of certain events, it raises the level of mental satisfaction of those individuals than those who experience the positively skewed distribution of the events. The range frequency model introduced the standard comparison point. When the

individuals belong above this point, they are more satisfied than that of their counterparts. The range frequency theory is not free from shortcomings. But one of the advantages of this theory is that its forecast is very testable as well as specific.

Aspiration level theory is an important type of judgment theory. Carp and Carp (1982) addressed that the difference between aspiration and the real situation can play an important role in the mental satisfaction of the individuals. Wilson (1960) and McGill (1967) reported that the proportion of satisfied desires and total desires contribute to mental satisfaction. This theory also suggested that high aspirations sometimes play a threatening role in mental satisfaction rather than bad situations. A person's earlier goal, experience influences the levels of aspirations. For example, Easterlin (1974) reported observing distinction in aspirations from the perspective of income levels. In contrast, Gibbs (1973) recognized the more privileged black in the United States who had lower mental satisfaction. In addition, the empirical evidence indicated that difference between real situation and aspiration are associated with an individual's mental health (Emmons et al., 1983; Gerrard et al. 1982; Kammann, 1982; Wilson, 1960).

An important question is linked with all judgment theories and that is whether comparisons happen enclosed in one particular domain, for instance income, or across all domains in general. Besides this query, the question of when does any kind of comparison take the dominant role is highly associated with the judgment theories. For instance, in between adaptation and social comparison, at what point does one become significant than the other? Dermer et al. (1979) and Emmons et al. (1983) reported that social comparison is very significant in most parts of the process of assessing satisfaction." In contrast, our past experience also contributes to experience of affect.

Finally, judgment theories can be critiqued based on their limit or boundaries. One important thing regarding judgment theories is that they do not reveal how events come to play hedonic value earlier than the judgment. For this reason, some situations or events are either good or better in contrast of the rest of the events experienced.

1.8 Literature Reviews

It is an initial task to review the relevant literatures related to empirical research. Literature reviews help us to know the existing knowledge of a particular area. It also helps us to know about the gaps in research. In this regard, based on the purpose of the present study, the discussion below includes the research and relevant evidences related to the mental health of the parents of autistic children in relation to education, income, and employment status.

Parents' mental health could be intensively influenced by the disabled children, especially when the disorder is ASD, including a wide range of behaviors and particularly social behaviors (Nouri, 2009). A wide range of studies suggested that different characteristics of autism disorders in children influences the levels of stress in the parents in different ways. The studies also indicated that higher level of parental stress is related to the severe symptoms of the autistic children (Gupta & Singhal, 2005). A few studies also found that parents with autistic children have reportedly experienced exclusive levels of frustration and pessimism and they have specific characteristics of anxiousness, schizoid traits, tension, higher traits of being aloof, hypersensitivity, and rigidity which separately and altogether reflect the extent of the levels of stress these parents experience (Firat et al., 2002). Similarly, Tarabek (2011) conducted a study and reported that parents having autistic children face exclusive marital distress and conflict.

In addition, Al-Dujaili and Al-Mossawy (2017) conducted a study and revealed that caregivers of autistic children expressed experiencing moderate levels of psychosocial burden. These findings also showed that there was a significant difference between the caregiver's psychosocial burdens and some demographic variables like gender and monthly income of the caregivers. Several studies also reported that an autistic child in the household is likely to trigger significant psychological burden among others (Feinberg et al., 2014; Van Steijn et al., 2014).

In addition, mothers play primary caregiver role for children (Firat et al., 2002). Foody et al. (2015) showed that anxiety is higher among caregivers of children with ASD (CASD) than that of the caregivers of non-autistic children. Another study also indicated that caregivers having autistic children reportedly experienced more depressive symptoms than their counterparts (Lajiness-O'Neill & Menard, 2008). Similarly, Yirmiya and Shaked (2016) also conducted a study and showed that caregivers of children with ASD have higher psychological distress than the parents of non-autistic children. Shu et al. (2000) also directed a study to investigate the mental health of autistic mothers. The sample was comprised of mothers having children with either autistic (n = 30), or Down syndrome (n = 11) and with non-autistic children (n = 56). Findings revealed that mothers of autistic children expressed more stress than that of the mothers of non-autistic children.

Furthermore, Kousha et al. (2019) carried out a study on mental health, quality of life, and happiness of mothers of autistic children. The sample of a descriptive-analytic study comprised 90 mothers of autistic children and 90 mothers of non-autistic children. The Symptom Checklist-90-R (SCL-90-R), the SF-36 Quality of Life

Questionnaire, and the Oxford Happiness Questionnaire were administered to collect the data of the study. The findings of this study concluded that mothers of autistic children exposed poorer mental health and quality of life than that of the mothers from the comparison groups. Findings also revealed that mothers of autistic children have lower levels of happiness than their counterparts. Similarly, Fairthorne et al. (2015) directed a study on ASD regarding which a total of 60 papers were collected. The results of this study indicated that mothers of autistic children were reportedly experiencing poorer mental health than that of mothers of children with Down syndrome and intellectual disability. Mugno et al. (2007) also found that mothers of autistic children expressed having a lower quality of life than that of the mothers of other children. A few studies also indicated that mothers with autistic children have poorer mental health, lower self-esteem, and life satisfaction and are exposed to greater levels stress and depression (Hsiao, 2016; Kim et al., 2016).

Ang and Loh (2019) conducted a study on mental health and coping in parents of children with autism spectrum disorder in Singapore. A total of 97 fathers and 106 mothers of autistic children were involved as a sample of this study. The results of this study indicated that mothers reported having higher levels of stress than their counterparts. A study was carried out by Gardiner and Iarocci (2012) which reported that autistic symptoms of children influence the quality of life of both family members and of course, the children themselves. Similarly, Hastings and Taunt (2002) also conducted a study and found that some parents of autistic children have greater mental health problems than those who have minute difficulties concerning their mental health. Gupta (2007) similarly concluded that parents of children with ASD have poorer mental health than that of the parents of children with other disabilities.

Some studies indicated that the severity of autism symptoms in children was an important predictor of parental mental health outcomes (Bromley et al., 2004; Hastings, 2003; Herring et al., 2006; Konstantareas & Papageorgiou, 2006).

Moreover, Vasilopoulou and Nisbet (2016) directed a study on the quality of life (QoL) of the parents of children with an autism spectrum disorder. This study was conducted to examine the QoL among parents of children with ASD (<18 years) and also to examine the associated factors regarding parents, children and contexts. The findings of the study indicated that parents of children with autism spectrum disorder have a lower quality of life than that of the parent of non-autistic children. A few studies also reported that parents having autistic children contextually experienced lower quality of life, higher depression, and more pessimism about the future than that of the parents of non-autistic children and other developmental disorder (Cappe et al., 2011; Johnson et al., 2011; Mak & Kwok, 2010).

In addition, Nikmat et al. (2008) conducted a cross-sectional study on parental stress and mental health of autistic children in Malaysia. A total of 52 parents (18 male and 34 female) were selected to acquire samples for the study. The results indicated that about 90.4% of parents had significant parenting stress, and 53.8% of parents have shown clinical disturbances in terms of psychological health. Findings also stated that there was significant relationship between mental health and gender and occupation of the autistic parents.

Similarly, Hsiao (2018) conducted a study on autism spectrum disorders. The sample consisted 236 parents of autistic children. Results showed that parents' gender, marital status, parental education, income, and parental stress were major contributors

to the quality of life of the parents of children with ASD. Results also showed that parental income and stress were significant predictors when considering these variables together.

Furthermore, Zablotsky et al. (2013) found that mothers with autistic children reported having poorer mental health and higher levels of stress than that of mothers with non-autistic children. Findings also suggest that lower-income was one of the significant predictors of emotional problems in mothers having children with autism.

Similarly, Al-Ansari and Jahrami, (2018) conducted a cross-sectional study. The results showed that mothers of autistic children reported having more psychological and environmental problems than that of the mothers of children with intellectual disabilities and that of the mothers of non-autistic children.

1.8.1 The Anxiety of Parents of Autistic Children in Relation to Education, Income, and Employment Status

Previous researches documented that different demographic variables were associated with anxiety of parents having autistic children. For example, Almansour et al. (2013) conducted a retrospective cohort study in Saudi Arabia. A total of 100 parents/caregivers (50 parents of autistic children and 50 parents of non-autistic children) participated in this study. They showed that parents of autistic children showed more anxiety and depression than that of the parents of non-autistic children.

Similarly, Zhao et al. (2011) concluded that mothers of autistic children experienced higher anxiety than of the fathers. Results also showed that parents having autistic boys reported experiencing more stress than that of the parents having autistic

girls. The finding of this study also indicated that the parent's educational background was negatively related to the anxiety of parents of autistic children.

In addition, Kuusikko-Gauffin et al. (2013) conducted a study on social anxiety in parents of high-functioning children with autism and Asperger syndrome. The sample involved 131 parents with autistic children and 597 parents of non-autistic children from the community. Social Phobia and Anxiety Inventory (SPAI) was administered to collect the data for this study. The findings of this study showed that mothers of autistic children experienced more social anxiety than that of the mothers from the control group. Results also indicated that mothers of autistic children scored more in the Social Phobia and Anxiety Inventory (SPAI) than that of the mothers from the control group. This study further showed that fathers of autistic children expressed higher somatic, cognitive, avoidance, and agoraphobic symptoms of social anxiety than the fathers of non-autistic children.

Similarly, Weiss (2002) carried out a study on hardiness and social support as predictors of stress in mothers of non-autistic children, children with autism, and children with mental retardation. A total of 120 mothers were involved (mothers having autistic children = 40, mothers having children with mental retardation = 40, mothers having non-autistic children = 40) in this study. The findings also reported that the mother of autistic children reported more anxiety than that of the mothers of mentally retarded and of the non-autistic children.

1.8.2 Depression of Parents of Autistic Children in Relation to Education, Income, and Employment Status

Research upon the relationship between the depression of parents of autistic children and different demographic variables also conducted in different countries. For instance, Benson (2006) administered a study upon 68 parents with autistic children. Results concluded that parents with autistic children reported experiencing higher levels of depression and stress than that of the parents of the non-autistic children. Similarly, Faisal (2015) also carried out a study to examine the depression and anxiety in the parents and the effects of having autistic children. A total of 53 parents were non-randomly selected as a sample. Beck Depression Inventory (BDI) and the Beck Anxiety Inventory (BAI) were administered to collect the data. Results showed that parents with autistic children expressed having greater levels of depression and anxiety. Findings also indicated that mothers reported more anxiety than that of the fathers of autistic children. A study was also carried out by Hong et al. (2018) which was a cross-sectional study on autism spectrum disorder. A total of 285 parents of children with ASD were selected as a sample of the study. Beck Depression Inventory-Short Form and Life Transition Scale were administered to collect the data from the participants of the study. The findings of this study indicated that, parents of the autistic child expressed moderate to severe depressive symptoms than that of their counterparts. Smith et al. (2010) correspondingly conducted a study on the daily experiences among mothers of adolescents and adults with autism spectrum disorder. The findings of this study revealed that parents of children with autism expressed more maternal depression than that of the parents with non-autistic children.

A few studies also concluded that parents with autistic children reported experiencing higher psychological distress and showed signs of having lower marital satisfaction, self-confidence, self-esteem, and elevated levels of negative emotions such as anger, fear, and resentment (Faso et al., 2013; Higgins et al., 2005).

In addition, Karim et al. (2017) conducted a comparative, cross-sectional, and analytical study on the comparison of depressive disorders between the mothers of children with and without autism spectrum disorder in Bangladesh. This study was carried out in the outpatient department of psychiatry in collaboration with the Shishu Bikash Kendro, Sylhet MAG Osmani Medical College Hospital, Sylhet. The sample involved 75 mothers with autistic children and 75 mothers of non-autistic children. Beck Depression Inventory (BDI) was administered to collect data. Results reported that mothers having autistic children reported higher levels of depression than that of the mothers of non-autistic children. Pohl et al. (2020) also conducted a comparative study of autistic and non-autistic women's experience of motherhood. The research method was a community-based participatory research model. The sample comprised of 355 autistic mothers and 132 non-autistic mothers. The results of this study showed that mothers of the autistic children expressed more depression and anxiety than that of the mothers of non-autistic children. Olsson and Hwang (2001) similarly documented that mothers of autistic children reported more depression than the fathers of autistic children and even the mothers of non-autistic children. Another study was carried out by Hou et al. (2018) in Taiwan. The sample comprised a collective of 51 mothers with autistic children and 51 mothers of children with developmental delay. They reported that mothers having autistic children experienced elevated levels of depression and

stress than their counterparts. Other studies also indicated that mothers having autistic children have greater depression and stress (Benson, 2010; Benson & Karlof, 2009). Moreover, De Sousa (2010) directed a study and found that mothers of autistic children reported higher depression and anxiety than that of the mothers of children with mental retardation. A few studies similarly indicated that the severity of autism increased the depression and stress among the mothers (Kinney et al., 2008; Previc, 2007; Tsai et al., 2008). A study also indicated that there was a significant relationship between the severities of autism disorder the children and their mothers' depressive symptoms (Davis & Carter, 2008). Bailey et al. (2007) also presented that mothers of disabled children reported higher depression than that of the fathers of disabled children.

A population-based study concluded that mothers with autistic children experienced higher emotional problems. Findings also showed that it increased maternal emotional disorders (Totsika et al., 2011).

Furthermore, Ellouze et al. (2018) administered a descriptive cross-sectional study on anxiety, depression, and quality of life in the parents of children with autism. A total of 103 parents were selected for sampling procedures. This study resulted that the levels of symptoms of anxiousness were at 18.4% and depressive symptoms were at 65% among the involved parents with children having ASD. The findings of the study also indicated that 46.6% of the participating parents had an impaired quality of life.

Similarly, Athari et al. (2013) conducted a study upon maternal depression, stress, the severities of autism among their children, and overall family income. A total of 250 mothers were the respondents of this study. Depression Anxiety and Stress Scale of 42 items (DASS-42) were administered to collect the data. Findings revealed that

differences in income induce depression and stress in mothers of autistic children. Results also indicated that the severity of autism in children influenced the income levels of mothers as well as elevates depression and stress in the mothers of autistic children. Some studies also reported that low family income was a key indicator of psychological health disorders, and mental disorders like depression in the families with members having ASD (Inaba et al., 2005; Levy & O'Hara, 2010; Wadsworth et al., 2008).

1.8.3 The Stress of Parents of Autistic Children in Relation to Education, Income, and Employment Status

Several empirical evidences indicated that there was a significant relationship between different socio-demographic variables like education, income and employment status and the stress of parents having autistic children. For example, Begum and Mamin (2019) conducted a narrative review in Bangladesh. The reviews spanned from the years 1990 to February, 2017. The findings of this study indicated that autism had a grave effect upon the economic status; family relationships considerably modify the lifestyle of each member of the family. Results also showed that autism influenced parental stress. Sinha et al. (2016) directed a cross-sectional study in India. The sample involved 98 parents (53 mothers and 45 fathers). The results of this study indicated that parents of autistic children reported having more stress than parents of children of specific learning disabilities as well as parents of non-autistic children. Results also revealed that parents of male children reported more stress than parents of a female child. This study further indicated that housewives and unemployed parents have experienced higher levels of stress than that of the employed parents. Similarly, Tripathi (2015) also conducted a study in India. A total of 320 parents of the autistic

children were selected from 10 different Autistic schools and organizations of Delhi and Dehradun city of Northern India. The findings of the study indicated that parents having severe autistic children reported elevated stress levels than the parents with children having less, moderate or no autistic conditions. Batool and Khurshid (2015) conducted a cross-sectional study concerned with stress among parents of children with autism in Lahore, Pakistan. The sample comprised of 100 parents (50 mothers and 50 fathers) with autistic children. Demographic variables such as parent's education, gender, income, age, child age, gender, family system, and many children were selected. The result of the study indicated that there was a significant relationship between parenting stress and the severity of autistic children. No evidence was found between different demographic variables and parenting stress. A few studies also point out that parents of autistic children showed experiencing more stress than that of the parents of non-autistic children (Feldman & Werner, 2002; Hutton & Caron, 2005; Mancil et al., 2009).

A vast research study also indicated that parents with children having developmental disabilities showed elevated levels of stress than the parents of children with non-autistic conditions (Dervishaliaj, 2013; Lessenberry & Rehfeldt, 2004).

In addition, previous studies showed that parents with autistic children expressed higher levels of stress than any other group (Valicenti-McDermott et al., 2015). Similarly, Bonis (2016) conducted a study on stress and parents of children with autism. The result of the study indicated that parents with autistic children scored higher levels of stress than parents of a normal child. Rivard et al. (2014) also shown that parents of autistic children reported having greater extent of stress than the parents of children with any other condition. A study was carried out by Abbeduto et al. in 2004. They reported that parents of autistic children reported experiencing more stress

than that of the parents of non-autistic children. Hayes and Watson (2013) also showed that families with children having ASD experienced more parenting stress than the families of typically developing (TD) children or those diagnosed with other disabilities such as cerebral palsy, Down syndrome (DS), intellectual disability. In another study, Karst and Hecke (2012) revealed that parents with autistic children face different overwhelming experiences such as increased parenting stress, mental and physical complexes compared to the parents of normally developed children. Amireh (2018) also conducted a study to identify the levels of stress of parents with autistic and down-syndrome children in Jordan. The findings of this study revealed that parents of autistic children showed higher levels of stress than the parents of children with down-syndrome and children with moderate or no disabilities. In one study, Watt and Wagner (2012) reported that parents of ASD shown greater stress than that of the parents of non-autistic children. Similarly, Pastor et al. (2015) also led a study and found that parental stress with autistic children was significantly higher than that of the parental stress of non-autistic children. Osborne and Reed (2009) similarly shown that parenting stress of autistic children was strongly related to the severity of autism spectrum disorder. Dunn et al. (2001) also showed that parents having children with autistic disorder expressed higher levels of stress than parents of children with other disorders. Wang et al. (2011) correspondingly found that parents having children with autistic conditions reported experiencing more stress. Miranda et al. (2019) also conducted a study on parenting stress in mothers of children with autism and without intellectual disability. The results of this study revealed that there was a significantly positive relationship between parental stress and the severity of children's autism spectrum disorder.

One study showed that parents of autistic children reported more stress than that of the parents of non-autistic children (Hastings et al., 2005). Several studies also showed that there was a significant correlation between parents having a child with an autistic problem and parental stress (Lecavalier et al., 2005; Tomanik et al., 2004).

Furthermore, Huang et al. (2014) conducted a study to investigate the impacts of autistic behaviors, emotional and behavioral problems on parenting stress in caregivers of children with autism. The findings of this study indicated that parents having mild or moderate autistic children reported experiencing higher levels of stress than that of the parents of non-autistic children.

Some studies also reported that parents with autistic children showed higher levels of stress than that of the parents of non-autistic children (Baker-Ericzen et al., 2005; Dardas, 2014; Howlin et al., 2004; Jx et al., 2017; Pisula & Porębowicz-Doersmann, 2017; Sivberg, 2002). Various studies also showed that parents with autistic children have reported experiencing more stress than parents with non-autistic children (Keenan et al., 2016) and parents with children of other developmental disabilities (Yamada et al., 2007).

Some studies indicated that the severity of autism and behaviors in children were the strongest predictors of the stress in the parents (Ingersoll & Hambrick, 2011; Lyons et al., 2010).

Sabih and Sajid (2008) carried out a research to study the relationship of parental stress and autism in children. Data were collected from 60 parents (30 fathers and 30 mothers) from different hospitals and institutions of mental retardation in Islamabad, Rawalpindi, and Wah Cantt, Pakistan from 2005-2006. The results of this study revealed that parents of autistic children reported having significant levels of

stress. The findings also indicated that mothers reportedly experienced more stress than the fathers of autistic children. In one study, results indicated that mothers reported higher levels of stress than fathers. Findings also revealed that single mothers reported experiencing higher levels of stress than the parents who have not separated (Tehee et al., 2009). Estes et al. (2009) also conducted a study and concluded that mothers with autistic children reportedly experienced higher parental stress than their counterparts. Similarly, Khorram et al. (2009) directed a study on 90 mothers (45 mothers having autistic children and 45 mothers of a non-autistic children) in Iran. The findings of this study showed that mothers having autistic child expressed more stress than their counterparts. Dabrowska and Pisula (2010) similarly conducted a study and revealed that parents with autistic children had higher levels of stress than that of the parents of children with Down syndrome. The result also showed that the mothers of autistic children experienced higher levels of stress than the fathers.

Khawar and Saeed (2016) conducted a study in Pakistan. The result of the study indicated that mothers with autistic children reported having more stress than parents of non-autistic children. Results further revealed that symptoms of autism and maternal stress were significantly correlated. Moreover, Montes and Halterman (2006, 2008) indicated that mothers with autistic children expressed more stress and reported lower mental health than mothers of non-autistic children. In another study, Peters-Scheffer et al. (2012) showed that mothers of autistic and intellectually disabled children faced more stress than the mothers of normal children. Tomeny (2017) also conducted a study on parenting stress as an indirect pathway to mental health concerns among mothers of children with autism spectrum disorder. In this study, 111 mothers of autistic children participated. The result of the study indicated that the symptoms of autism spectrum disorder of children are highly related to maternal stress.

One study concluded that mothers having autistic children showed more stress than the mother of other disabilities and non-autistic children (Griffith et al., 2010). Few studies also indicated that mothers having disabled children expressed higher levels of stress and other health disorders than mothers of the normal child (Chouhan et al., 2016; Pereira-Silva & Dessen, 2004; Shin & Nhan, 2009).

In addition, Smith et al. (2001) carried out a study and this study assessed levels of parenting stress in a total of 880 families having children with disabilities. The average age of the children was 2 years 11 months and in case of the parents it was 32 years. Parenting stress was measured by employing the parenting stress index. The results of this study indicated that income, time available for interaction with children and social support predict parenting stress than any other factors. Similarly, Kausar et al. (2019) also conducted a study on socio-demographic variables and stress of the parents of children with an autism spectrum disorder. The 251 parents were selected from five cities in Pakistan. A parental perceived stress scale was administered to collect the data. The results of this study indicated that parent's education, monthly income, age, and gender of special children were contributing to parental stress. One study was carried out by Habib et al. (2017) of which the results have shown mothers to have higher psychological stress. Results also found that there was a significant relationship between parental stress and maternal education, the severity of symptoms in the children, and the age of the children with ASD. Furthermore, Soltanifar et al. (2015) also showed that socio-demographic variables contributed to parental stress. Results specifically indicated that lower levels of education and income were significantly related to stress in parents with autistic children. Herlihy (2010) also conducted a study to examine the socio-demographic factors that are related to parental stress in parents of toddlers with autism spectrum disorders. The sample consisted of 50

parents of toddlers with autism spectrum disorders. The results of this study indicated that families from the lower-income groups experienced higher parental stress. Results also showed that yearly income was found to be a moderator of the relationship between symptom severity and parenting stress. Similarly, Al-Oran and AL-Sagarat (2016) conducted a study to investigate the stress of parents of autistic children and the variables that contribute to parental stress. They found that poor levels education and lower-income contributed to the parental stress of children with an autistic child. In another study, Samadi and McConkey (2014) showed that mothers reported higher levels of stress than fathers, and parental stress was significantly related to parent's lower education. Krakovich et al. (2016) also revealed that educational status was the predictor of poorer mental health of mothers with autistic children. Results also indicated that educational status also influenced the stress of mothers having autistic children. Croen et al. (2006) also found that the annual expense of care of the autistic child was higher than that of the care of the normal child.

Sim et al. (2018) found contrast results in their study. The findings of this study showed that caregivers of the autistic family reported higher levels of stress. Findings also revealed that socio-demographic variables were not associated with severe family stress.

1.8.4 Anxiety, Depression, and Stress of Parents of Autistic Children in Relation to Education, Income, and Employment Status

Several research findings indicated that education, income and employment status contributed to anxiety, depression, and stress of parents of autistic children. For instance, Micali et al. (2004) showed that parents of children having autistic children reported higher anxiety, depression, and stress than that of the parents of non-autistic

children. Similarly, Falk (2012) conducted a study to investigate the factors that contribute the study variable such as stress, anxiety, and depression in the parents of children with autism. A sample comprised of 250 mothers and 229 fathers of autistic children. The findings of this study indicated that parents of autistic children expressed more stress, depression, and anxiety than that of the parents of non-autistic children. Furthermore, Rezendes and Scarpa (2011) conducted a study and found that parents of autistic children showed more anxiety, stress, and depression. Firth and Dryer (2013) also conducted a study to investigate the contributor of distress in parents of children with an autism spectrum disorder. A total of 109 participants were selected as a sample of the study. They reported that autistic severity increased the level of anxiety, depression, and stress of the parents of autistic children. Similarly, Merkaj et al. (2013) explored the study to compare the symptom of stress, depression, and anxiety in parents of autistic children. The sample was 70 parents with autistic children along with 70 parents of the normally developed children for the comparison. Depression, Anxiety, Stress, Scale 42, (Lovibond & Lovibond, 1995) were administered to collect the data. The findings of the study indicated that parents having autistic children expressed more symptoms of anxiety, depression, and stress than their counterparts. The findings of this study also reported that mothers with autistic children showed higher anxiety, depression, and stress than the fathers of autistic children. Gong et al. (2015) similarly directed a study on 188 parents of autistic children and 144 parents of non-autistic children. They revealed that parents with autistic children showed more anxiety, depression, and stress than parents of non-autistic children. They also indicated that mothers of autistic children reported more depression and anxiety than that of the parents of normal child and mothers reported more depression than fathers of autistic children. Similarly, Lai et al. (2015) administered a study to explore the coping and

well-being in parents of children with autism spectrums disorders. The sample involved 73 parents of autistic children and 63 parents of normally developing children for the comparison. This study resulted that, parents of autistic children expressed more stressful behavior (i.e. lower satisfaction with parent-child bond, negative parental self-views, and experiences of difficult child behaviors) and more depressive symptoms than their counterparts. Allik et al. (2006) similarly found that parents having children with pervasive developmental disorder reported feelings of intense anger, guilt, depression, or anxiety most of the time. Hastings and Beck (2004) also conducted a study and concluded that parents having autistic children exposed to higher levels of anxiety, depression, and stress than that of the parents of non-autistic children. A study was carried out by Junior et al. (2016) on 84 mothers and 18 fathers of autistic children. They found that behavioral problems of the autistic children were the predictor of anxiety and depression of those parents. In addition, Padden and James (2017) also stated that parents of autistic children reported higher levels of anxiety, depression, and stress than parents of non-autistic children. A vast study correspondingly stated that parents having autistic children reported more anxiety, depression, and stress than that of the parents of the normally developed children. (Benjak, 2009; Civick, 2008; Fiske, 2009; Lee, 2009).

Ruqayyah et al. (2018) conducted a retrospective cohort study on depression, anxiety, and stress among mothers of autism spectrum disorder children. A total of 200 mothers (mothers having autistic children = 100, mothers having non-autistic children = 100) participated in this study. Depression, Anxiety, and Stress scale (DASS- 42) were used to collect the data. They stated that mothers with autistic children reported higher depression, anxiety, and stress than mothers of non-autistic children. Singer (2006) also administered a meta-analysis. He revealed that mothers of autistic children

reported more depression and stress than the mothers of non-autistic children. In another study directed by Kousha et al. (2016) in Iran. This was a descriptive cross-sectional study. The sample comprised of 135 mothers having autistic children. They concluded that mothers having autistic children reported higher anxiety, depression, and lower scores of health-related qualities of life. Similarly, Ingersoll et al. (2011) explored the relationship between depressive mood and broader autism phenotype in mothers of children with and without autistic children. For this purpose, 165 mothers (71 autistic mothers and 94 non-autistic mothers) were selected as a sample of this study. The findings of the study showed that mothers having autistic children reported higher depression, parenting stress, and more characteristics related to broader autism phenotype than that of the mothers of non-autistic children. Omar et al. (2017) similarly conducted a study and found that 71.4% of mothers of autistic children expressed moderate stressor and more than half of the mothers reported feelings of anger and nervousness. In one study carried out by Jeans et al. (2013). The sample was 200 mothers of ASD children. They found that mothers of ASD were exposed to more depression and stress than mothers without ASD children. Phetrasuwan and Shandor (2009) also found that mothers of autistic children showed more stress, depression, and less well-being. Al-Farsi et al. (2016) also conducted a case-control study on autism spectrum disorder. Depression, Anxiety, and Stress Scale were administered to collect the data. They stated that anxiety, depression, and stress of caregivers of autistic children were higher than other caregivers.

Some studies resulted that mothers of autistic children and intellectual disabilities showed higher anxiety, depression, and stress than that of the mothers of non-autistic children (Al-Kuwari, 2007; Al-Eithan et al., 2010).

In addition, Pocinho and Fernandes (2018) led a cross-sectional behavioral study on depression, stress, and anxiety among parents of sons with disabilities. A total of 871 parents were involved (403 parents having children with disabilities and 468 parents having without abilities) in this study. The Depression Anxiety Stress Scale (DASS-21) was used to collect the data. The findings of this study concluded that parents having disabilities child reported higher anxiety, depression, and stress than that of the parents having without disabilities child. Findings also revealed that the age of the disabled child was related to parental anxiety, depression, and stress. The results further showed that disable parent's lower education level was related to higher anxiety, depression, and stress.

Similarly, Zhou et al. (2019) administered a study in China to explore the emotional problems in the mothers of autistic children in relation with their socioeconomic status as well as the core symptoms of the autistic children. Participants included 180 mothers of autistic children in China. The finding of the study indicated that mothers of autistic children reported higher anxiety and depressive behavior. Findings also revealed that the junior high school education level of mothers was significantly related to depressive symptoms.

Moreover, Gray (2002) conducted a longitudinal study. The findings of this study indicated that lower levels of employment (e.g., job type or the number of hours worked) and lack of outside employment was related to anxiety, depression, and stress of the mothers of autistic children. Bitsika and Sharpley (2004) documented that half of the parents of youth of autistic children reported more anxious and two-thirds of parents reported more depression.

Research evidence also indicated that there was a relationship between family impact and child with ASD, including numerous psychological effects, such as anxiety (Hodge et al., 2011) and depression (Hartley et al., 2012; Walsh et al., 2013) and social effects, such as problems with interpersonal relationships and marital distress (Petalas et al., 2012) and physical health effects (Giallo et al., 2013).

1.9 Rationale of the Study

Bangladesh Sangbad Sangstha (2019) reported that over 1.4 million children are suffering from ASD in Bangladesh. Previous studies conducted in different countries have indicated that the presence of an autistic child in a family became one of the reasons for higher psychological affliction or poorer mental health among parents (Bader & Barry, 2014; Feinberg et al., 2014; Mitchell & Holdt, 2014; Van Steijn et al., 2014) as compared to parents with non-autistic children. Because nowadays, there has been a shift in the delivery of health care services from child-centered models toward a family-centered model where parents are the key members of the family (Bamm & Rosenbaum, 2008; Leiter, 2004; MacKean et al., 2005) and that they are mainly engaged in regular and active participation during all phases of treatment and rehabilitation that sustains proper management of children with autism. For example, the parents having children with autistic disorders have been found to be exposed to elevated risks of stress and anxiety when compared to the parents of non-autistic children (Davis & Carter, 2008; Hayes & Watson, 2013; Tehee et al., 2009; Zablotsky et al., 2013). They have shown higher scores on the levels of anxiety (Firat et al., 2002; Foody et al., 2015), depression (Hong et al., 2018; Lajiness-O'Neill & Menard, 2008; Yirmiya & Shaked, 2015) and stress (Baker-Ericzen et al., 2005; Hutton & Caron, 2005; Mancil et al., 2009; Pisula & Porębowicz-Doersmann, 2017). The preceding review of the literatures also revealed that parents of autistic children have mainly suffered from anxiety, depression, or stresses which are related to various factors like

gender, the severity of autistic children, education, income, and employment status. Different investigators reported that the mothers of autistic children stated having significantly poorer mental health than that of the fathers (Bailey et al., 2007; Faisal, 2015; Kuusikko-Gauffin et al., 2013). Kausar et al. (2019) conducted a study where it is found that there was a significant relationship between education and the caregivers' perceived stress.

Some other researchers have also found that there were significant differences in parents' psychological burden (Al-Dujaili & Al-Mossawy, 2017), mental health, and perceived stress (Kausar et al., 2019; Zablotsky et al., 2013) in terms of income. Similarly, Hsiao (2018) documented that the parents' gender, marital status, parental education, income, and parental stress are significantly related to the quality of life of these parents with autistic children. Employment status is significantly related to parental stress and resilience (Sinha et al., 2016) and mental health (Nikmat et al., 2008).

But no evidence was found between different demographic variables and parenting stress (Batool & Khurshid, 2015; Sim et al., 2018). Muhammad et al. (2019) conducted a study on the mental health of the parents of autistic children in Bangladesh. They reported that there is a significant difference in mental health between parents of autistic children and parents of non-autistic children and also the mothers of autistic children reportedly have experienced lower mental health than the fathers of autistic children. Finally, this study revealed that there are no significant differences in the mental health of parents of autistic children in terms of education and income. So, the literature reviews revealed that there were some contradictory results between socio-demographic variables and the mental health of parents. In most of the studies, it has been seen that the investigators have failed to control the variables like age, gender, education, income, and employment status and hence, have only

investigated the main effects of one independent (socio-demographic) variable on one dependent variable (e.g., anxiety, depression or life stress, etc.) at a time but did not investigate any interaction effects of one or more socio-demographic variables on multiple dependent variables (e.g., depression, anxiety, and stress, etc.) simultaneously.

Considering this need, the present investigator has attempted to fill up the gap of knowledge by conducting this study for identifying how the variables like education, income, and employment status affect the mental health of the parents with autistic children all at a time and also in different combination in the context of Bangladesh since all these studies were conducted in foreign cultures earlier.

1.10 Objectives of the Study

The main objective of the present study is to investigate the mental health of parents of autistic children. The specific objectives of the study are stated as below:

i. To examine whether there is any difference in anxiety, depression, and stress between parents with and without autistic children,

ii. To explore whether there is any difference in anxiety, depression, and stress between mothers and fathers of autistic children,

iii. To examine whether anxiety, depression, and stress vary according to educational qualifications of parents of autistic children,

iv. To explore whether anxiety, depression, and stress differ according to family income of parents of autistic children,

v. To examine whether anxiety, depression, and stress vary according to the employment status of parents of autistic children,

vi. To investigate the interaction effects of education, income, and employment status on anxiety, depression, and stress of parents of autistic children.

CHAPTER TWO
METHODS

Methods

2.1 Target Population

The target population of the present study was the parents (having at least one autistic child) of autistic and non-autistic children in Bangladesh.

2.2 Study Area

Different districts of Rajshahi division in Bangladesh.

2.3 Design of the Study

The present study was designed to investigate the mental health of parents of autistic children. A cross-sectional survey design was used for conducting the present study. In the study, the independent variables were parents' education (categorized into post-graduate, graduate, and undergraduate), family income (categorized into high, medium, and low), and employment status (categorized into employed and unemployed). The mental health of the parents reflecting anxiety, depression, and life stress was regarded as dependent variable. Bangla version of anxiety measuring questionnaire was administered on the respondents to measure their level of anxiety, Bangla version of depression measuring questionnaire was administered on the respondents to measure their level of depression, and adapted Bangla version of life stress measuring questionnaire was administered on the respondents to measure their stress in life.

2.4 Participants

A total of 534 parents (284 parents with autistic children and 250 parents without autistic children) were selected purposively based on some inclusion and exclusion criteria as participants in the present study. The parents with autistic children were categorized according to their education, income, and employment status. The father age ranges were 26–55 years and the mother age ranges were 20–50 years old. All the respondents were selected from the different districts of Rajshahi Division in Bangladesh.

2.4.1 Inclusion Criteria

i. Parents having one autistic child and have no known mental illness.

ii. Family living in the town area.

iii. The autistic child had lived with their families for at least 6 months after the initiation of autism' symptoms.

2.4.2 Exclusion Criteria

i. Parents who had been involved in any intervention program for their psychological well-being during the preceding years.

ii. Parents having more than one autistic child and have known mental illness.

iii. Family living in the village area.

iv. Parents who were not interested to participate in the present study.

Their personal information was recorded as demographic variables. The details of sample characteristics are shown in Table 1.

Table 1

Distribution of Participants According to Demographic Variables (N = 534)

Variables	Levels	Frequency	Percentage
Educational Qualification	Post-graduate	142	26.60%
	Graduate	207	38.80%
	Undergraduate	185	34.60%
Family Income	High	49	9.20%
	Medium	149	27.90%
	Low	336	62.90%
Employment Status	Employed	245	45.90%
	Unemployed	289	54.10%

2.5 Measures

To measure anxiety, depression, and life stress of parents having autistic children, the following measures were administered upon the respondents. Three self-report questionnaires along with a personal information form were used to collect data. These are as follows:

1. Personal information form
2. Anxiety measuring questionnaire
3. Depression measuring questionnaire
4. Life stress measuring questionnaire

Each measure is shown briefly in Table 2 as follows:

Table 2

Summary of the Questionnaires Used in the Present Study

Scales	Developed by	Adapted by	No. of Items	Possible scale Range	Cronbach's alpha (α)
Personal Information Form (PIF)	Researcher	—	12	—	—
Anxiety Measuring Questionnaire	Deeba and Begum (2002)	—	36	0–144	0.89
Depression Measuring Questionnaire	Uddin and Rahman (2005)	—	30	30–150	0.88
Life Stress Measuring Questionnaire	Cohen (1999)	Fahim (2001)	10	0–40	0.85

2.5.1 Personal Information Form (PIF)

A specially designed form was used to collect data into two sections; the first section consisted of the parent's age, gender, educational qualifications, family income, profession, economic status, spouse educational qualifications, family types, habitat, and the other sections were consistent of autistic child's gender, illness duration, present health condition, which treatment is received (see Appendix A).

2.5.2 Anxiety Measuring Questionnaire.

Deeba and Begum (2002) developed the anxiety measuring questionnaire to measure anxiety levels. Although initially the questionnaire had 39 items finally the questionnaire was consisted of 36 items with 5 points Likert-type options for each item. Item analysis was done through 102 clinical and non-clinical participants.

Scoring: For each item, there were five categories of responds options ranging from "*never occur*" to "*profoundly occurs*". For each item, score "0" indicates "*never occurs*", "1" indicates "*mildly occurs*", "2" indicates "*moderately occurs*", "3" indicates "*severely occurs*", and score "4" indicates "*profoundly occurs*". The sum of the scores of all items was the total score of an individual. Generally, individuals on anxiety levels can be classified as mild (54 and less), moderate (55 to 66), severe (67 to 77), and profound (78 to 135 and above). Cut off score of the questionnaire was 47.5. A high score indicates higher anxiety and low score indicates low anxiety.

Reliability: The split-half reliability was 0.92 (α =.01) and the co-efficient alpha for 36 items was 0.95 (α =.01). The test re-test reliability or the co-efficient of stability, r = 0.69 (α =.01) was found.

Validity: Following the sequential system model of scale development and by taking expert's input in various steps of item constructions, the content validity of the

questionnaire was ensured. Three external criteria were found to be positively correlated (psychiatrists' rating, $r = 0.63$; $p < .01$) with the anxiety questionnaire's score. Construct validity of the questionnaire was assessed by discrimination of the scale among samples consisted of clinical and non-clinical participants ($F = 60.28$ at $\alpha = .01$). Total item correlation was ranged from $r = 0.40$ to $r = 0.75$, $p < .01$). Both severity and screening norms were developed for the questionnaire.

2.5.3 Depression Measuring Questionnaire

Uddin and Rahman (2005) developed depression measuring questionnaire to assess the intensity of depression. It is a 5-point Likert-type questionnaire consisted by 30 items. The response options are ranging from "*not at all applicable*" to "*totally applicable*".

Scoring: The response options are scored as "*not at all applicable* = 1", "*not applicable* = 2", "*uncertain* = 3", "*a bit applicable* = 4", and "*totally applicable* = 5". All items are the positive item in the questionnaire. The sum of scores of 30 items was the total score of the scale on individuals. Total depression scores can be categorized as minimal (30 – 100), mild (101 – 114), moderate (115 – 123), and severe (124 – 150). If an individual participant's score crosses 94, then he/she is considered as depressed person. Higher score indicates higher depression.

Reliability: The test re-test reliability of the questionnaire was found to 0.60 (p <.01) and split-half reliability was found to 0.76 (p <.01).

Validity: The validity of the questionnaire was estimated using concurrent and construct validity. The questionnaire was found to be significantly positively correlated with the psychiatrists' rating in depression ($r = 0.38$, $p < .01$), patients' self-rating in depression ($r = 0.59$, $p < .01$) with HADS (Hospital Anxiety and Depression Scale; Chowdhury, 2000). Besides, the depression measuring questionnaire discriminated between depressed and non-depressed participants ($F = 85.36$, $p < .001$).

2.5.4 Life Stress Measuring Questionnaire

The questionnaire was developed by Cohen (1999) from "How stressful is your life?" and it was translated and adapted in Bangla by Fahim (2001). The questionnaire consists of 10 items to measure the life stress of the respondents. It is a 5 points Likert-type questionnaire. Item no 1, 2, 3, 7, 9, and 10 were positive and item no. 4, 5, 6, and 8 were negative.

Scoring: For each item, respondent expressed their feelings which were categorized into 5 options (i.e., "*never*"= "0", "*rarely*"= "1", "*sometimes*"= "2", "*often*"= "3", and "*constant*"= "4". For positive items, scoring 0 to 4, and for negative items scoring is reversed in order (4 to 0). Participants on life stress levels can be classified as mild (10 to 19), moderate (20 to 29), and severe (30 to 40).

Reliability: The significant correlation co-efficient of the Bangla version of Life Stress Questionnaire with the English version was found (0.90, $p < .01$). Besides, the test re-test reliability over 2 weeks was (0.94, $p < .01$). This means that the reliability of the questionnaire was satisfactory.

2.6 Procedures

At first, collecting necessary information from the participants, permission was taken from concerned authority, and rapport was established with respondents. After rapport establishment, the researcher expressed the purpose of the study in the Bangladeshi context and also assured them about the confidentiality of the responses. Respondents were encouraged to ask any questions they might have and they were informed of their rights to withdraw from the study at any time. After that, the respondents were requested to fill up a booklet consisted of three standardized self-report questionnaires and one personal information form (attached to the first page). The

researcher worked with each participant belonging in different condition categories. After completing the task according to the instructions, the inventory booklet was collected from the respondents. Finally, participants were given thanks for their cooperation in the present study.

2.7 Data Processing and Analysis

Each participant's responses were collected and scored according to the scoring principles of anxiety, depression, and life stress measuring questionnaires. Then, the obtained data were analyzed in computer using Statistical Package for Social Science (SPSS) software version 20 for descriptive and inferential statistics. To assess the reliability of the questionnaires, data were analyzed for determining internal consistency reliability identified as Cronbach alpha (α). Before applying inferential statistics, different assumption tests were computed through SPSS whether data are normally distributed or not. Frequency and percentage were assessed for describing the socio-demographic characteristics of the participants.

Independent sample *t*-test was carried out to examine whether there was any significant difference in anxiety, depression, and stress scores between the parents with autistic children and the parents of non-autistic children. MANOVA was employed as multivariate test statistic for identifying the main and interaction effects in anxiety, depression, and stress of parents with autistic children according to their gender, educational qualification, income, and employment status. The level of significance for the statistical tests was set at .05. Results were discussed and presented through figures and tables as applicable.

CHAPTER THREE
RESULTS

Results

According to the objectives of the study, the results have been presented in three parts. In the first part, normality test on anxiety, depression, and stress scores in terms of parents with autistic and non-autistic children presented in Table 3–4 and figure 1–2 and *t*-test between parents with autistic and non-autistic children was also reported in Table 5. In the second part, MANOVA among the dependent and independent variables were presented in table 6. In the third part, interaction effects and normality tests among gender and employment status (in terms of anxiety), gender and education, gender and income, gender and employment status, education and income; gender, education, and income; education, income, and employment status (in terms of depression) analysis were carried out. Findings of the interaction effects and normality tests have been presented in table 7 to 11 and figure 3.1 to 15 respectively.

Normality Test as Assumption Test

In statistics, it is conventional to assume that the observations are normal. The whole statistical framework is grounded on this assumption and if this assumption is violated, the inference can break down. For this reason, it is necessary to check or test this assumption before attempting any statistical analysis of data. In the following sections, few assumptions tests were applied before applying inferential statistics.

Normality Test on Anxiety, Depression, and Stress for Parents with and without Autistic Children

Table 3

Showing Mathematical Analysis of Anxiety, Depression, and Stress Scores of Parents with Non-autistic Children as Normality Test for Applying Inferential Statistics

Variables	Skewness		Kurtosis		*p*	*Test of Normality*[α]
	Statistic	Standard Error	Statistic	Standard Error		
Anxiety	.052	.154	.416	.307	.05	*A.N.D*
Depression	-.214	.154	-.671	.307	.05	*A.N.D*
Stress	-.139	.154	.336	.307	.05	*A.N.D*

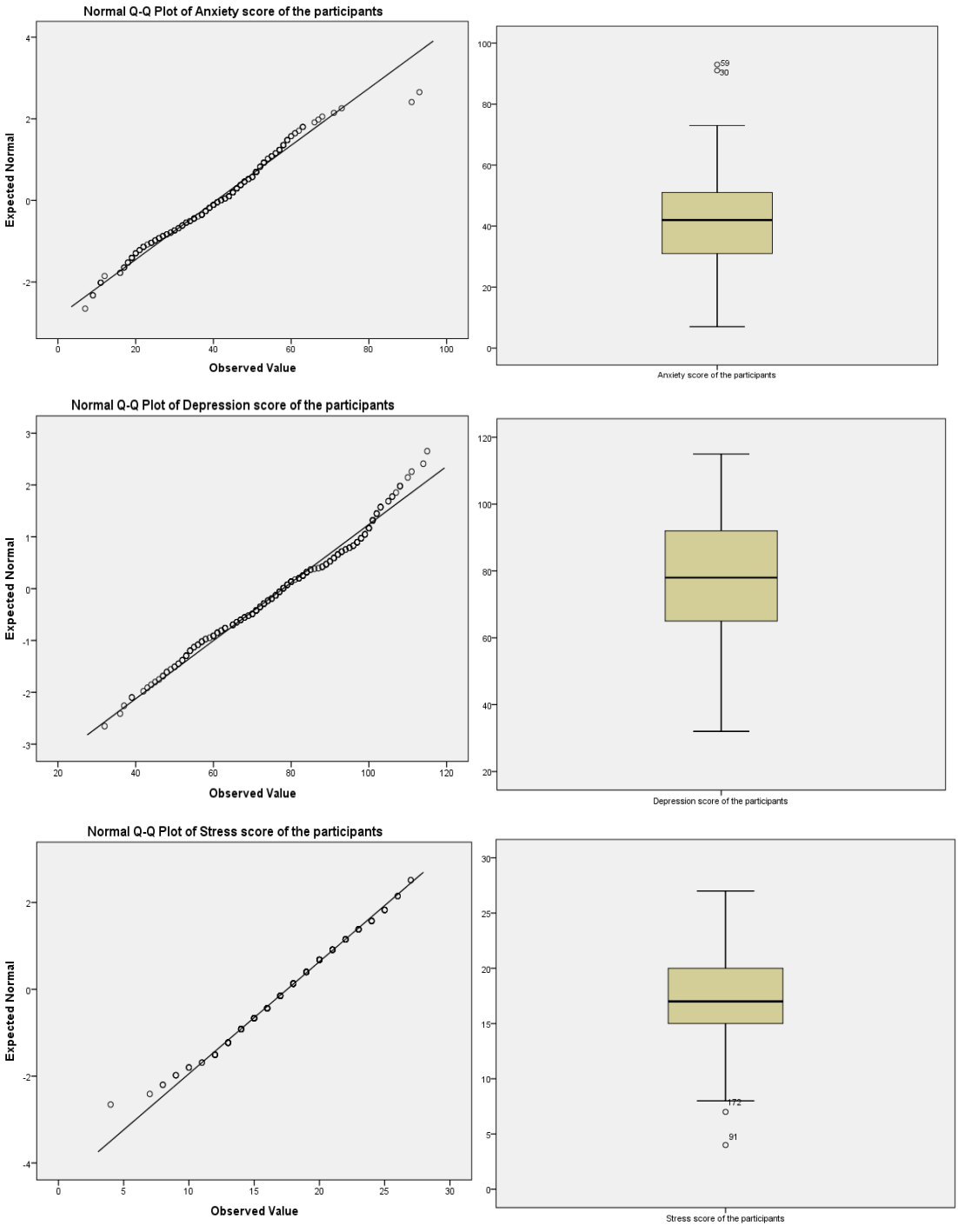
Note. α. Approximately Normally Distributed

The analysis presented in Table 3 shown that data are approximately normally distributed in terms of the mathematical output of the assumption test of anxiety, depression, and, stress scores of parents with non-autistic children. **Skewness** and **Kurtosis** suggested that the data are approximately normally distributed, and the range is found between (-1 to +1). The mean values are very close to 0 and variance is almost 1. **Skewness** and **Kurtosis** have respectively indicated that data of parents with non-autistic children are almost normally distributed.

Visual Graphs of Normality Test of the Anxiety, Depression, and Stress Scores of Parents with Non-autistic Children for Applying Inferential Statistics

Figure 1

Visual Graphs of Anxiety, Depression, and Stress scores of Parents with Non-autistic Children



Based on the visual output of the assumption test of anxiety, depression, and stress scores of parents with non-autistic children it can be assumed that the data are approximately normally distributed. The visual inspection of normal Q-Q plots permitted that the data were approximately normally distributed.

In Figure 1, the **Q-Q plots** show that the data points do not seriously deviate from the fitted line. Q-Q plots display the observed values against normally distributed data (represented by the line) which were fall along the line. So, they consistently indicate that the variables are normally distributed. Further, the **Box plots** presented in figure 1 clearly show the normal pattern of the data in case of anxiety, depression, and stress of parents with non-autistic children. It contains outliers and the data are symmetric.

Table 4

Showing Mathematical Analysis of Anxiety, Depression, and Stress Scores of Parents with Autistic Children as Normality Test for Applying Inferential Statistics

Variables	Skewness		Kurtosis		*p*	*Test of Normality*[α]
	Statistic	Standard Error	Statistic	Standard Error		
Anxiety	.400	.145	-.790	.288	.05	*A.N.D*
Depression	-.300	.145	-.531	.288	.05	*A.N.D*
Stress	.198	.145	-1.070	.288	.05	*A.N.D*

Note. α. Approximately Normally Distributed

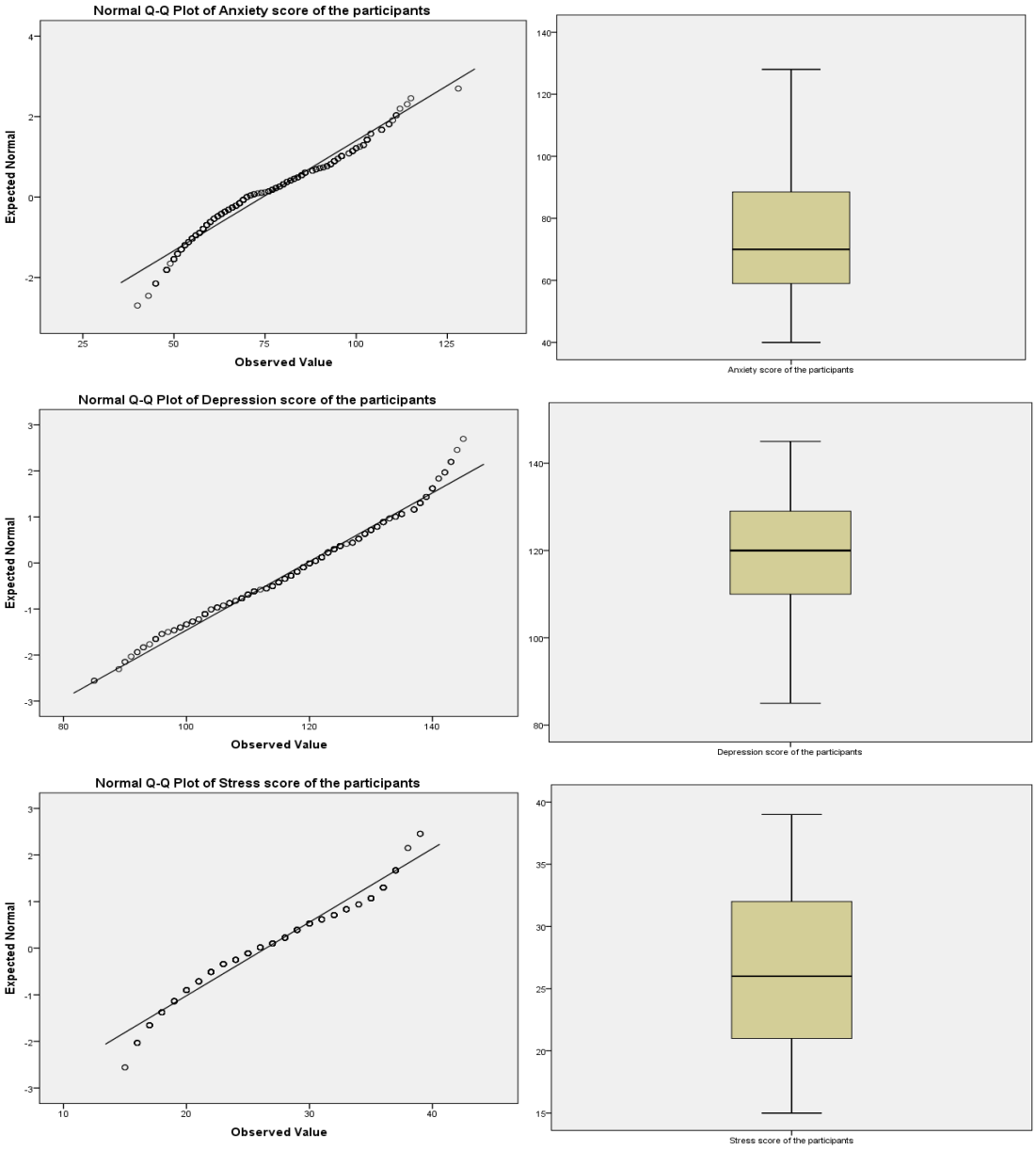
Thus, data (Table 4) are approximately normally distributed in terms of the mathematical output of the assumption test of anxiety, depression, and stress scores of parents with autistic children. **Skewness** and **Kurtosis** suggested that the data are approximately normally distributed, and the range is found between (-1 to +1). The

mean values are very close to 0 and variance is almost 1. The **Skewness** and **Kurtosis** have respectively indicated that randomly drawn data of parents with autistic children are almost normally distributed.

Visual Graphs of Normality Test of Anxiety, Depression, and Stress Scores of Parents with Autistic Children for Inferential Statistics

Figure 2

Visual Graphs of Anxiety, Depression, and Stress scores of Parents with Autistic Children



Based on the visual output of the assumption test of the anxiety, depression, and stress scores of parents with autistic children, it can be assumed that the data are approximately normally distributed. The visual inspection of normal Q-Q plots permitted that the data were approximately normally distributed.

In Figure 2, the **Q-Q plots** show that the data points do not seriously deviate from the fitted line. Q-Q plots display the observed values against normally distributed data (represented by the line) which were falling along the line. So, they consistently indicate that the variable is normally distributed. Further, the **Box plots** presented in figure 2 clearly show the normal pattern of the data in case of anxiety, depression, and stress of parents with autistic children. It contains outliers and the data are symmetric.

Table 5

Mean, Standard Deviation, and t-value of the Anxiety, Depression, and Stress scores of Parents with and without Autistic Children

Mental Health	Pattern of Parents	*N*	*M*	*SD*	*t*
Anxiety	Parents with Autistic child	284	74.37	18.27	23.48***
	Parents with Non-autistic child	250	40.72	14.30	
Depression	Parents with Autistic child	284	119.58	13.40	30.74***
	Parents with Non-autistic child	250	77.89	17.84	
Stress	Parents with Autistic child	284	26.46	6.33	19.33***
	Parents with Non-autistic child	250	17.53	3.87	

Note. ****p* <.001, *M* = Mean, *SD* = Standard Deviation.

Table 5 indicates that there is a significant difference between parents having autistic children and non-autistic children in case of anxiety, depression, and stress scores where the mean scores of parents with autistic children are higher than parents with non-autistic children. So, it can be said that parents with autistic children revealed experiencing lower mental health than their counterparts.

Table 6

Summary of MANOVA representing Gender, Education, Income, and Employment Status in terms of Anxiety, Depression, and Stress Scores

Effect		Value	*F*	Hypothesis *df*	Error *df*	*p*
Gender	Pillai's Trace	.062	5.636[b]	3.000	255.000	.001
	Wilks' Lambda	.938	5.636[b]	3.000	255.000	.001
	Hotelling's Trace	.066	5.636[b]	3.000	255.000	.001
	Roy's Largest Root	.066	5.636[b]	3.000	255.000	.001
Education	Pillai's Trace	.093	4.163	6.000	512.000	.000
	Wilks' Lambda	.909	4.168[b]	6.000	510.000	.000
	Hotelling's Trace	.099	4.173	6.000	508.000	.000
	Roy's Largest Root	.072	6.165[c]	3.000	256.000	.000
Income	Pillai's Trace	.086	3.841	6.000	512.000	.001
	Wilks' Lambda	.915	3.884[b]	6.000	510.000	.001
	Hotelling's Trace	.093	3.927	6.000	508.000	.001
	Roy's Largest Root	.084	7.199[c]	3.000	256.000	.000
Employment Status	Pillai's Trace	.012	1.026[b]	3.000	255.000	.382
	Wilks' Lambda	.988	1.026[b]	3.000	255.000	.382
	Hotelling's Trace	.012	1.026[b]	3.000	255.000	.382
	Roy's Largest Root	.012	1.026[b]	3.000	255.000	.382

Pillai's Trace reported in Table 6 reveals that there was a significant effect of gender on anxiety, depression, and stress, $V = 0.06$, F (3, 255) = 5.64, $p < .001$. However, individual univariate tests on the outcome variables also revealed significant effects on anxiety, F (1, 257) = 11.50, $p < .01$; depression, F (1, 257) = 10.02, $p < .01$ and stress, F (1, 257) = 11.25, $p < .01$.

Pillai's Trace also showed that there was a highly significant effect of education on anxiety, depression, and stress, $V = 0.10$, F (6, 512) = 4.16, $p < .001$. However, individual univariate tests on the outcome variables also exhibited significant effects on anxiety, F (2, 257) = 4.92, $p < .01$; depression, F (2, 257) = 8.70, $p < .001$ and stress, F (2, 257) = 4.74, $p < .05$.

Again, Pillai's trace indicated that there was a highly significant effect of income on anxiety, depression and stress, $V = 0.19$, F (6, 512) = 3.84, $p < .01$. However, individual univariate tests on the outcome variables revealed non-significant effects on anxiety, F (2, 257) = 1.10, $p > .05$; depression, F (2, 257) = 2.41, $p > .05$ and significant effect on stress, F (2, 257) = 10.18, $p < .001$.

Table 7

Summary of ANOVA including Main and Interaction Effects among Gender, Education, Income, and Employment Status in terms of Anxiety, Depression, and Stress Scores

Source	Dependent Variable	Type III Sum of Squares	*df*	Mean Square	*F*
Gender	Anxiety	2399.059	1	2399.059	11.500***
	Depression	934.455	1	934.455	10.015**
	Stress	264.669	1	264.669	11.250***
Education	Anxiety	2050.950	2	1025.475	4.916***
	Depression	1623.490	2	811.745	8.700***
	Stress	223.024	2	111.512	4.740**
Income	Anxiety	458.141	2	229.071	1.098
	Depression	449.921	2	224.960	2.411
	Stress	478.800	2	239.400	10.176***
Employment Status	Anxiety	67.520	1	67.520	.324
	Depression	58.523	1	58.523	.627
	Stress	72.363	1	72.363	3.076
Gender × Education	Anxiety	1040.335	2	520.167	2.494
	Depression	652.803	2	326.401	3.498*
	Stress	31.430	2	15.715	.668

Source	Dependent Variable	Type III Sum of Squares	*df*	Mean Square	*F*
Gender × Income	Anxiety	739.025	2	369.513	1.771
	Depression	921.149	2	460.575	4.936**
	Stress	38.954	2	19.477	.828
Gender × Employment Status	Anxiety	928.004	1	928.004	4.449*
	Depression	799.936	1	799.936	8.573**
	Stress	41.078	1	41.078	1.746
Education × Income	Anxiety	597.734	4	149.433	.716
	Depression	876.941	4	219.235	2.350*
	Stress	94.153	4	23.538	1.001
Education × Employment Status	Anxiety	112.724	2	56.362	.270
	Depression	90.664	2	45.332	.486
	Stress	56.895	2	28.447	1.209
Income × Employment Status	Anxiety	386.060	2	193.030	.925
	Depression	149.526	2	74.763	.801
	Stress	76.391	2	38.195	1.624

Source	Dependent Variable	Type III Sum of Squares	*df*	Mean Square	*F*
Gender × Education × Income	Anxiety	1008.685	2	504.343	2.418
	Depression	1232.308	2	616.154	6.604**
	Stress	57.375	2	28.687	1.219
Gender × Education × Employment Status	Anxiety	193.001	2	96.501	.463
	Depression	3.986	2	1.993	.021
	Stress	37.574	2	18.787	.799
Gender × Income × Employment Status	Anxiety	.000	0	—	—
	Depression	.000	0	—	—
	Stress	.000	0	—	—
Education × Income × Employment Status	Anxiety	1089.315	3	363.105	1.741
	Depression	925.904	3	308.635	3.308*
	Stress	58.356	3	19.452	.827
Gender × Education × Income × Employment Status	Anxiety	—	—	—	—
	Depression	—	—	—	—
	Stress	—	—	—	—

Source	Dependent Variable	Type III Sum of Squares	*df*	Mean Square	*F*
Within cells (Error)	Anxiety	53611.853	257	208.606	
	Depression	23979.349	257	93.305	
	Stress	6046.201	257	23.526	
Total	Anxiety	1665233.000	283		
	Depression	4111698.000	283		
	Stress	210156.000	283		

*Note. *p < .05, ** p < .01, *** p < .001; (—) = indicates that there is no available data*

The results indicated that the main effects of gender and education are statistically significant in terms of anxiety, depression, and stress. Also, the main effects of income are statistically significant in terms of stress. The interaction effects of gender and education, gender and income, gender and employment status, education and income, gender, education and income, education, income, and employment status are statistically significant in terms of depression. Again, interaction effects of gender and employment statuses are statistically significant in terms of anxiety.

Normality Test on Gender

Table 8

Showing Mathematical Analysis of Father and Mother in terms of Anxiety, Depression, and Stress Scores of Parents with Autistic Children as Normality Test for Applying Inferential Statistics

Mental Health	Variables	Skewness		Kurtosis		*p*	*Test of Normality*[α]
		Statistic	Standard Error	Statistic	Standard Error		
Anxiety	Father	.73	.20	-.06	.40	.05	*A.N.D*
	Mother	-.02	.20	-.94	.41	.05	
Depression	Father	-.31	.20	-.63	.40	.05	*A.N.D*
	Mother	-.68	.20	.07	.41	.05	
Stress	Father	.69	.20	.20	.40	.05	*A.N.D*
	Mother	-.39	.20	-1.01	.41	.05	

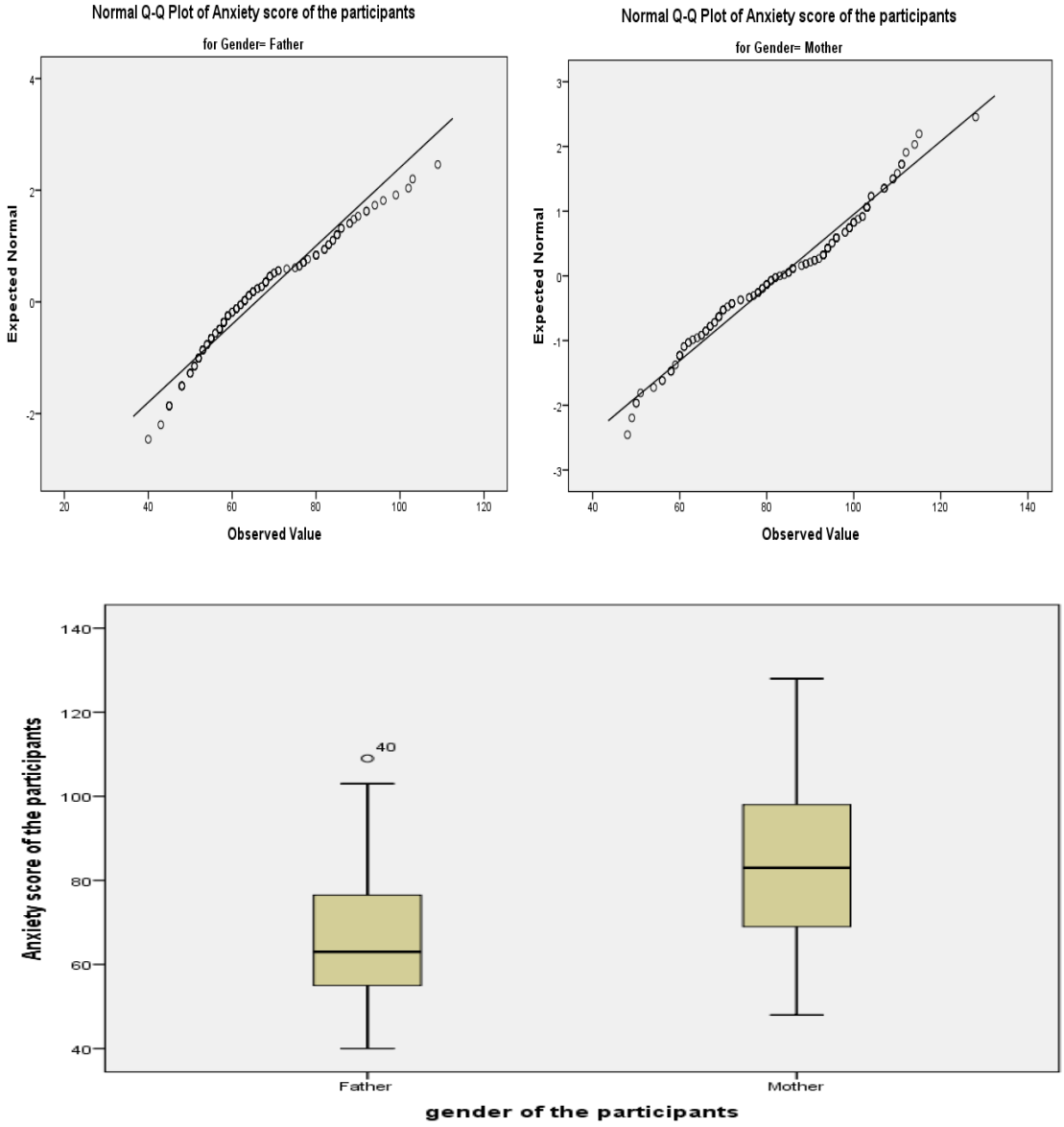
Note. α. Approximately Normally Distributed

The analysis presented in Table 8 has shown that data are approximately normally distributed in terms of the mathematical output of the assumption test on gender type in terms of anxiety, depression, and stress scores of parents with autistic children. **Skewness** and **Kurtosis** suggested that the data are approximately normally distributed, and the range is found between (-1 to +1). The mean values are very close to 0 and variance is almost 1. **Skewness** and **Kurtosis** have respectively indicated that randomly drawn data of parents with autistic children are almost normally distributed.

Visual Graphs of Normality Test of Father and Mother in terms of Anxiety, Depression, and Stress Scores

Figure 3.1

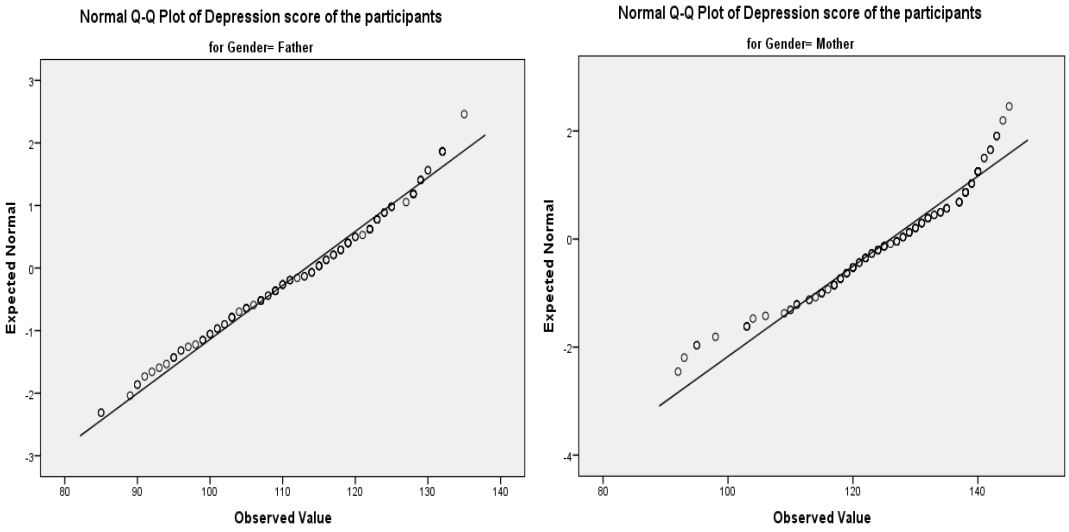
Visual Graphs of Anxiety Scores of Father and Mother with Autistic Children

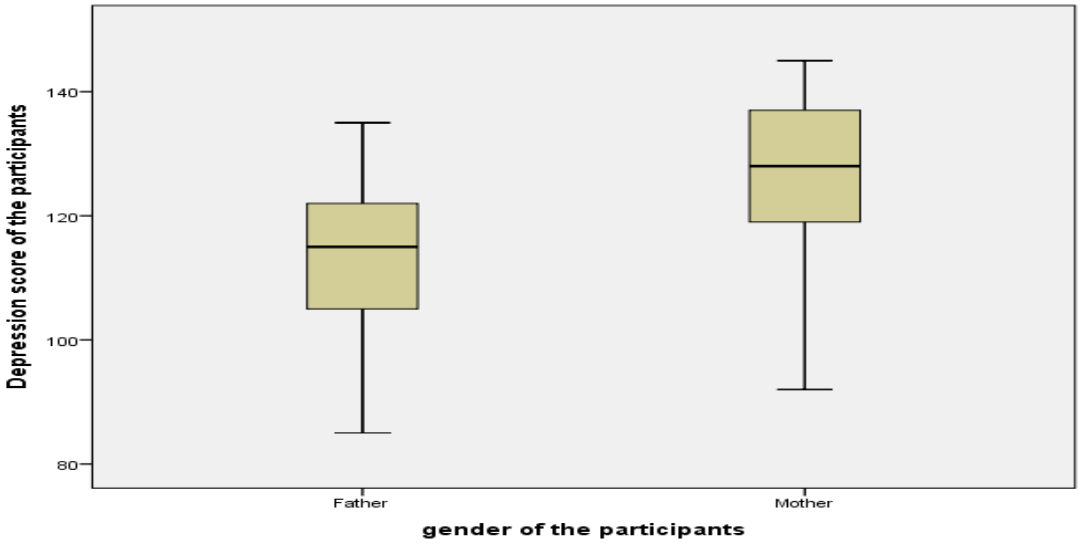


Visual Graphs of Father and Mother with Autistic Children as Assumption Tests in terms of Depression Scores

Figure 3.2

Visual Graphs of Depression Scores of Father and Mother with Autistic Children

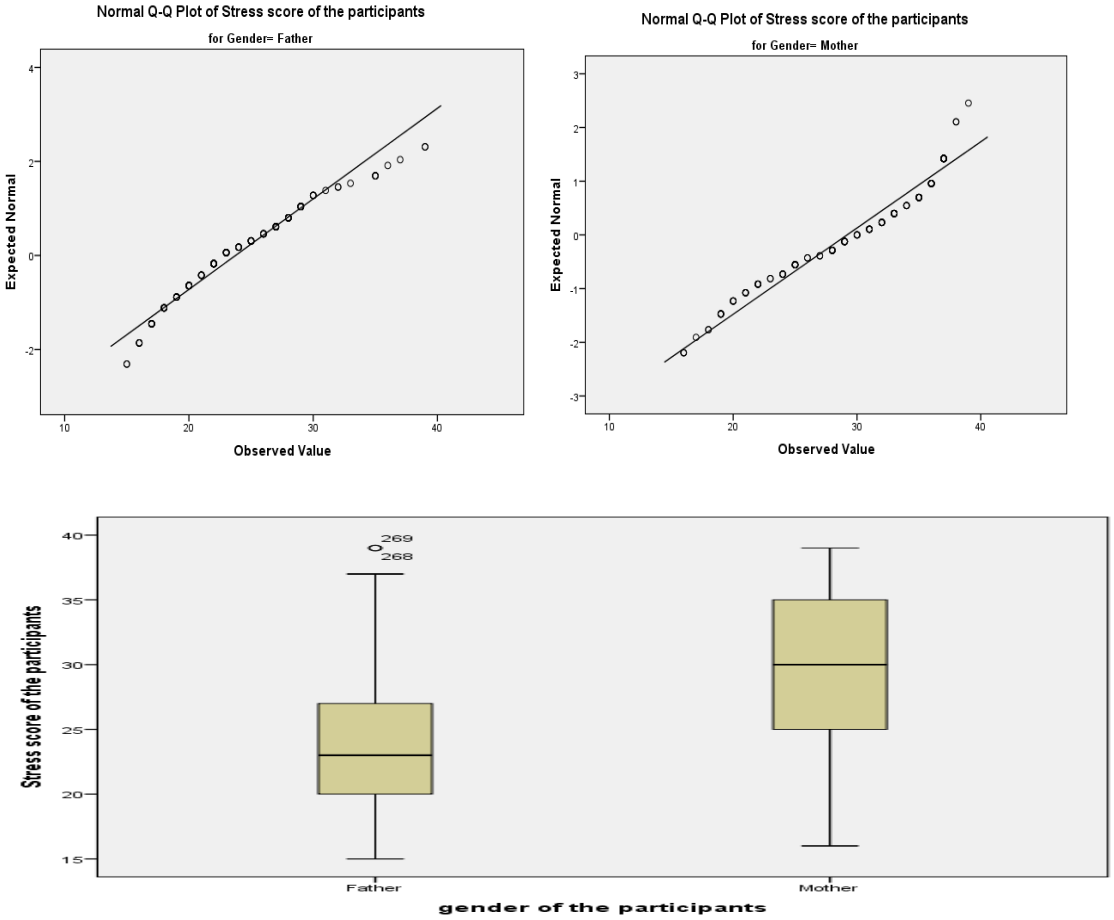




Visual Graphs of Father and Mother with Autistic Children as Assumption Tests in terms of Stress Scores

Figure 3.3

Visual Graphs of Stress Scores of Father and Mother with Autistic Children



The visual graphs, for father and mother in terms of anxiety, depression, and stress have shown normal **Q-Q plots** and **Box plots** which suggested that data are approximately and normally distributed.

Main Effect of Gender

Table 9

Mean, Standard Deviation, and t-value of the Anxiety, Depression, and Stress Scores of Father and Mother with Autistic Children

Mental Health	Gender of the Parents	*N*	*M*	*SD*	*t*-test
Anxiety	Father	143	65.68	14.27	9.19***
	Mother	141	83.18	17.69	
Depression	Father	143	113.22	11.59	9.16***
	Mother	141	126.03	11.98	
Stress	Father	143	23.76	5.19	8.01***
	Mother	141	29.20	6.23	

****p* < .001 *Note. M* = Mean, *SD* = Standard Deviation

Table 9 indicates that there is a significant difference between fathers and mothers with autistic children in case of anxiety, depression, and stress scores where the mean scores of mothers with autistic children are higher than that of the fathers. So, it can be said that mothers having autistic children revealed lower mental health than their counterparts.

Normality Test on Educational Qualification

Table 10

Showing Mathematical Analysis of Anxiety, Depression, and Stress Scores of Parents with Autistic Children in terms of Educational qualification as Normality Test for Applying Inferential Statistics

Mental Health	Variables	Skewness		Kurtosis		*p*	*Test of Normality*[α]
		Statistic	Standard Error	Statistic	Standard Error		
Anxiety	Post-graduate	.69	.27	-.41	.53	.05	*A.N.D*
	Graduate	.48	.22	-.32	.44	.05	
	Under-Graduate	-.07	.26	-1.22	.51	.05	
Depression	Post-graduate	-.15	.27	-.97	.53	.05	*A.N.D*
	Graduate	-.45	.22	.05	.44	.05	
	Under-Graduate	-.34	.26	-1.09	.51	.05	
Stress	Post-graduate	.74	.27	.30	.53	.05	*A.N.D*
	Graduate	.09	.22	-.79	.44	.05	
	Under-Graduate	-.30	.26	-1.19	.51	.05	

Note. α. Approximately Normally Distributed

The analysis presented in Table 10 shown that data are approximately normally distributed in terms of the mathematical output of the assumption test on different educational levels in terms of anxiety, depression, and stress scores of parents with autistic children. **Skewness** and **Kurtosis** suggested that the data are approximately normally distributed, and the range is found between (-1 to +1). The mean values are very close to 0 and variance is almost 1. **Skewness** and **Kurtosis** have respectively indicated that randomly drawn data of parents with autistic children are almost normally distributed.

Visual Graphs of Normality Test for Different Educational Levels in terms of Anxiety, Depression, and Stress Scores

Figure 4.1

Visual Graphs of Anxiety Scores for Parents with Autistic Children in terms of Educational Levels

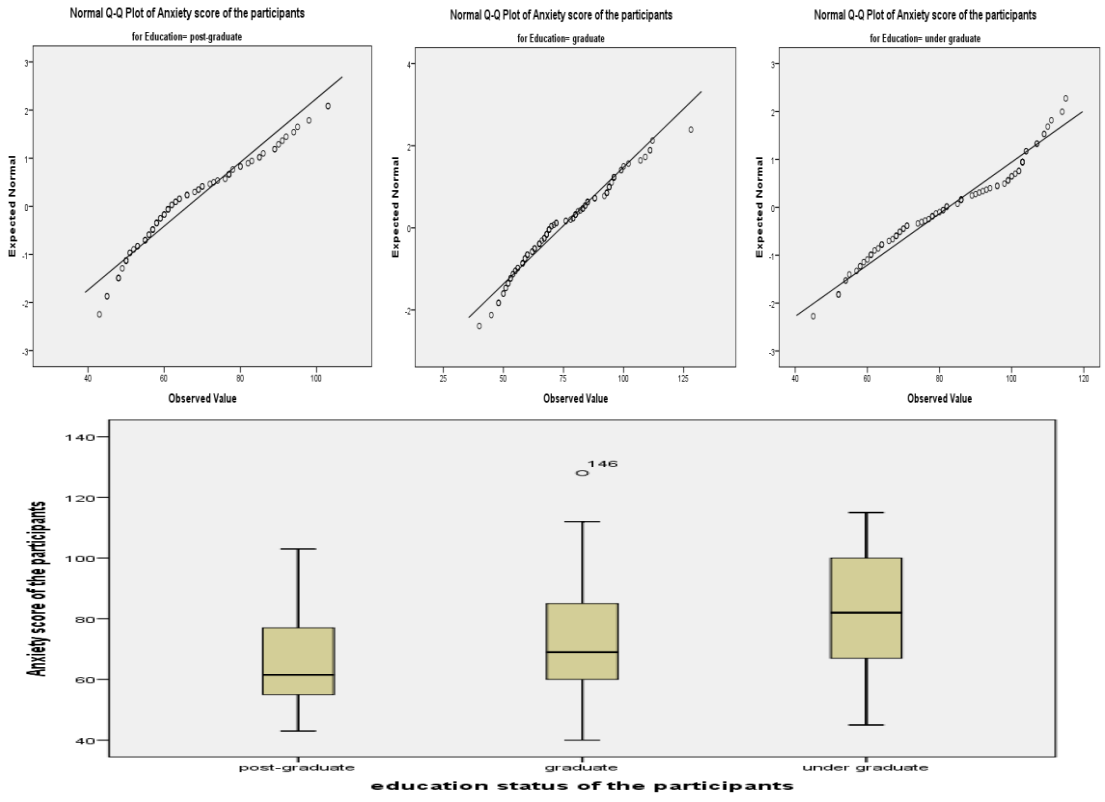
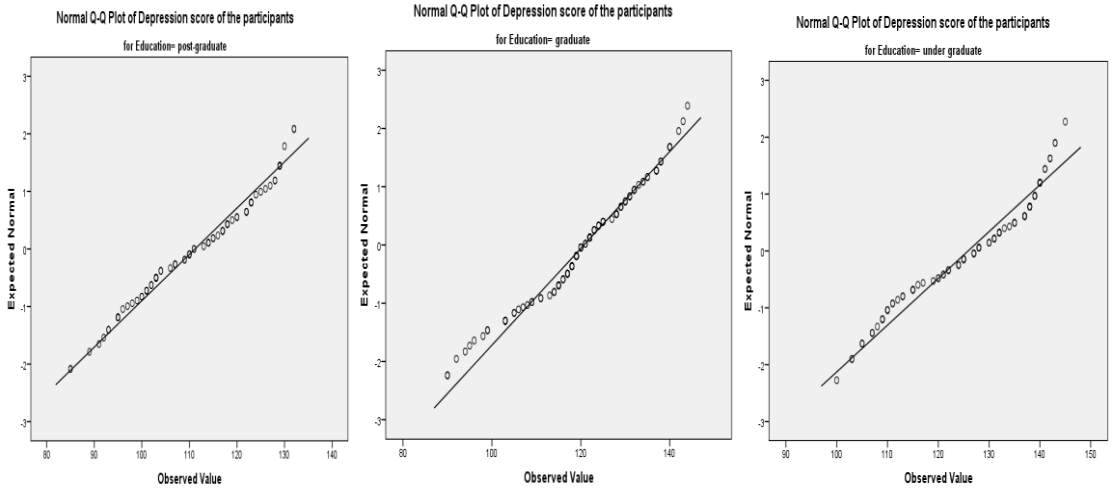


Figure 4.2

Visual Graphs of Depression Scores for Parents with Autistic Children in terms of Educational Levels



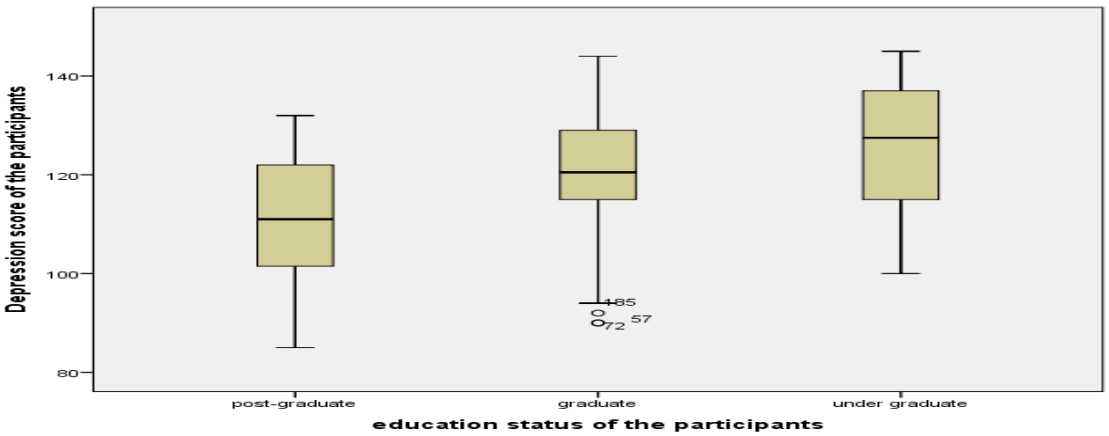
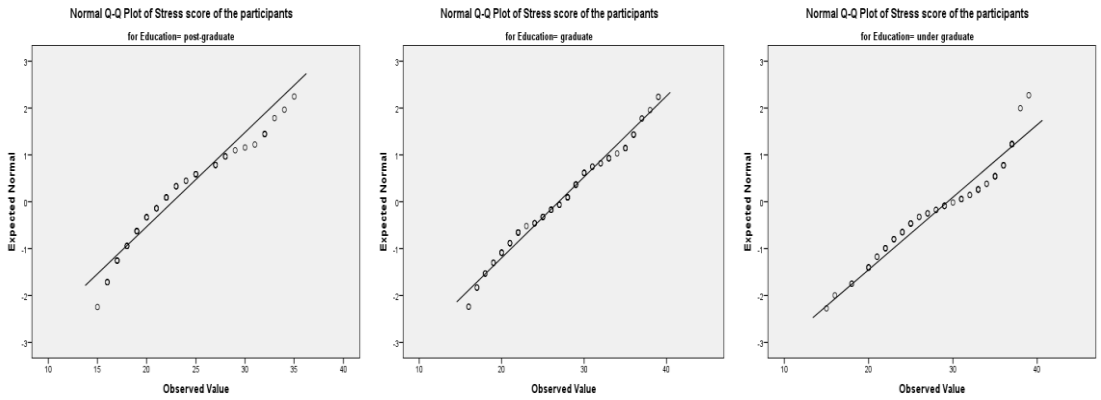
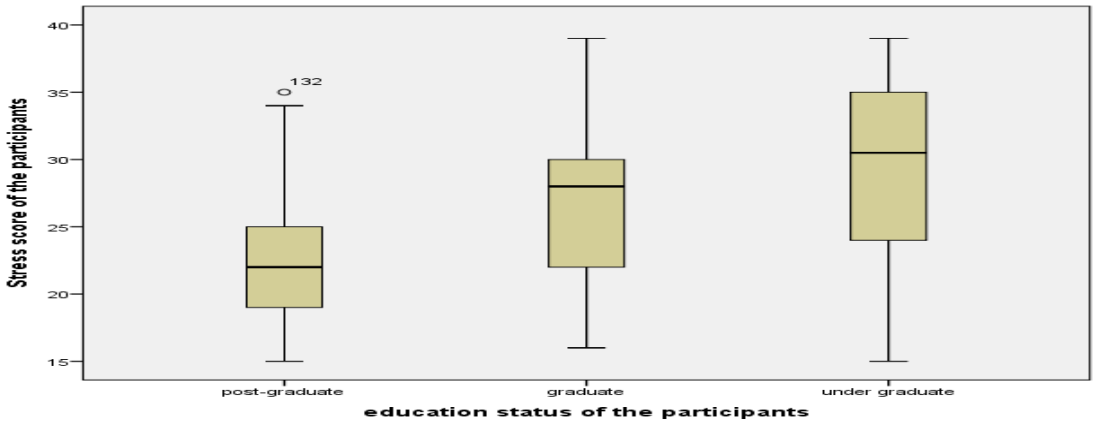


Figure 4.3

Visual Graphs of Stress Scores for Parents with Autistic Children in terms of Educational Levels





The visual graphs of anxiety, depression, and stress scores in terms of educational qualification have shown normal **Q-Q plots** and **Box plots** which suggested that data are approximately and normally distributed.

Table 7.1

Mean Differences (Post Hoc Tukey Test) in Anxiety, Depression, and Stress Scores for the Parents having Children with Autism according to Parents' Education Level

	(I) Education Level	(J) Education Level	Mean	Mean Difference	Std. Error
Anxiety	Post-graduate	Graduate	74.03	-7.825*	2.497
		Under graduate	82.44	-16.242*	2.678
	Graduate	Post-graduate	66.20	7.825*	2.497
		Under graduate	82.44	-8.416*	2.444
	Under graduate	Post graduate	66.20	16.242*	2.678
		Graduate	74.03	8.416*	2.444
Depression	Post-graduate	Graduate	120.69	-9.499*	1.764
		Under graduate	125.86	-14.673*	1.892
	Graduate	Post-graduate	111.19	9.499*	1.764
		Under graduate	125.86	-5.174*	1.727
	Under graduate	Post graduate	111.19	14.673*	1.892
		Graduate	120.69	5.174*	1.727
Stress	Post-graduate	Graduate	26.92	-4.286*	.839
		Under graduate	29.37	-6.735*	.900
	Graduate	Post-graduate	22.64	4.286*	.839
		Under graduate	29.37	-2.448*	.821
	Under graduate	Post graduate	22.64	6.735*	.900
		Graduate	26.92	2.448*	.821

* $p < .05$

Table 7.1 indicates that mean differences are significant for all education levels i.e., postgraduate and graduate, postgraduate and undergraduate, graduate and undergraduate in case of anxiety, depression, and stress. Table 7.1 also indicates that in the case of anxiety, depression, and stress postgraduate parents have better mental health than the graduate and undergraduate parents. Results also revealed that in case of anxiety, depression, and stress, graduate parents have higher mental health than undergraduate parents. So, it can be said that undergraduate parents have higher mental health problems.

Normality Test on Income

Table 11

Showing Mathematical Analysis of Anxiety, Depression, and Stress Scores of Parents with Autistic Children in terms of Income Level as Normality Test for Applying Inferential Statistics

Mental Health	Variables	Skewness		Kurtosis		*p*	*Test of Normality*[α]
		Statistic	Standard Error	Statistic	Standard Error		
Stress	High	1.07	.46	.74	.90	.05	*A.N.D*
	Medium	.67	.28	-.17	.56	.05	
	Low	.01	.18	-1.22	.36	.05	

Note. α. Approximately Normally Distributed

The analysis presented in Table 11 have shown that the data are approximately normally distributed in terms of the mathematical output of the assumption test on different income levels in terms of stress scores of parents with autistic children.

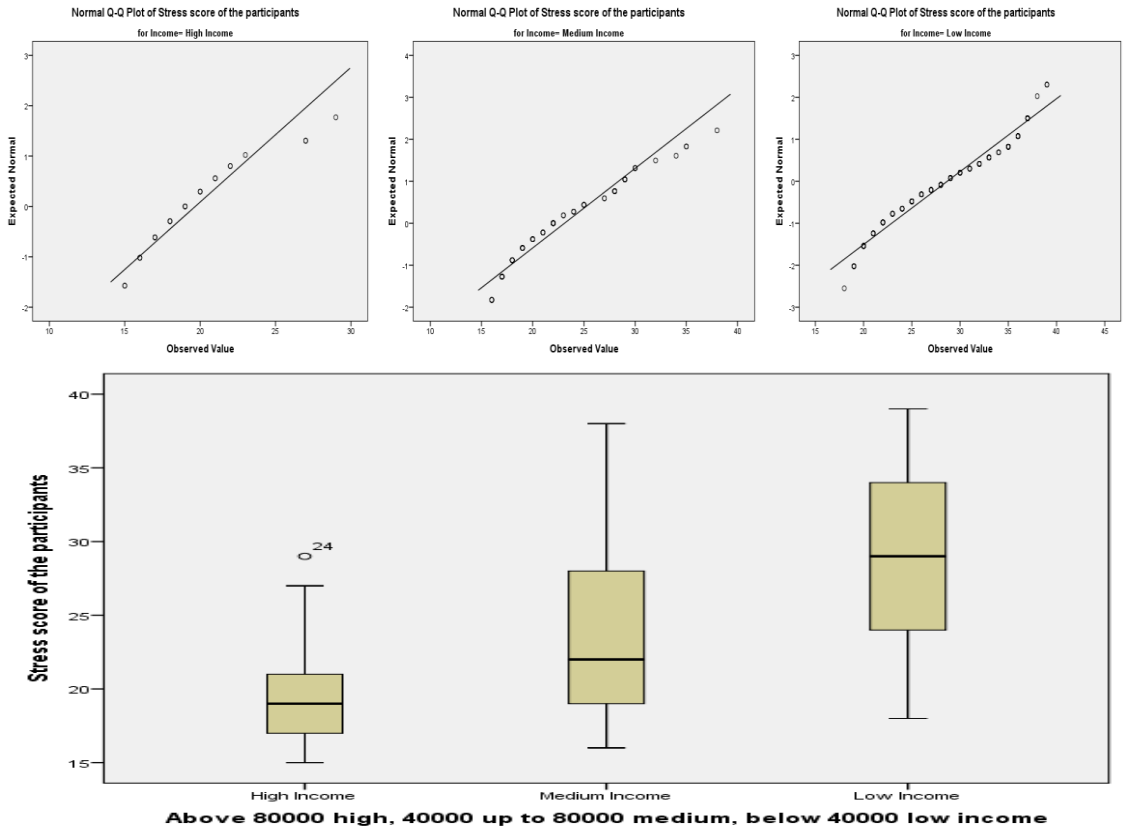
Skewness and **Kurtosis** suggest that the data are approximately normally distributed, and the range is found between (-1 to +1). The mean values are very close to 0 and variance is almost 1. **Skewness** and **Kurtosis** are respectively indicated that randomly drawn data of parents with autistic children are almost normally distributed.

Visual Graphs of Normality Test for Different Income Levels in terms of Stress Scores

Visual graphs of stress scores of parents with autistic children as assumption tests in terms of income levels

Figure 5

Visual Graphs of Stress Scores for Parents with Autistic Children in terms of Income Levels



The visual graphs of stress scores in terms of income levels have shown normal **Q-Q plots** and **Box plots** which suggested that data are approximately and normally distributed.

Table 7.2

Mean Differences (Post Hoc Tukey Test) in Stress Scores for the Parents having Children with Autism according to Parents' Income Level

Variable	(I) Income Level	(J) Income Level	Mean	Mean Difference	Std. Error
Stress	High-income	Medium Income	23.11	-3.430*	1.272
		Low-income	28.68	-9.003*	1.169
	Medium Income	High-income	19.68	3.430*	1.272
		Low-income	28.68	-5.573*	.758
	Low-income	High-income	19.68	9.003*	1.169
		Medium Income	23.11	5.573*	.758

* $p < .05$

Table 7.2 indicates that mean differences are significant for high and low family income, medium and low family income, and also significant for high and medium family income in terms of stress. Table 7.2 also indicates that in the case of stress, parents from high-income groups expressed lower levels of stress than parents from medium and low-income groups. Results also revealed that in the case of stress, parents from the medium income group have experienced lower levels of stress than the parents from low-income groups. So, low-income parents with autistic children have higher levels of stress.

Interaction Effects

Gender × Employment Status

The interaction effects (presented in Table 7) between gender and employment status is statistically significant ($p < .05$). Comparisons are also made among different cell mean.

Table 7.3

Results of t-test among different cell means in terms of Anxiety scores

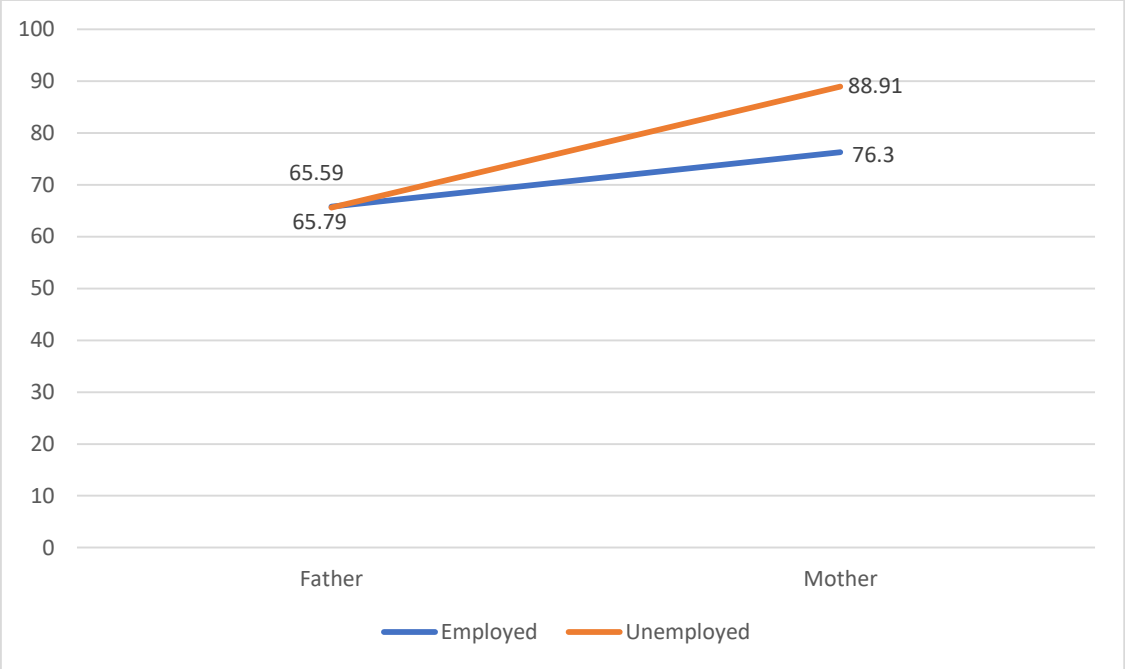
Variables	Employment Status	*N*	Mean	*SD*	*t*-test
Father	Employed	63	65.79	14.32	.085
	Unemployed	80	65.59	14.32	
Mother	Employed	64	76.30	17.45	-4.50***
	Unemployed	77	88.91	15.84	

Note: *** $p < .001$

Table 7.3 showed the differences among different levels of the employment status of parents with autistic children in case of anxiety. Here, highly significant difference is found between employed and unemployed mothers where the employed mothers expressed having lower anxiety than their counterparts.

Figure 6

Showing Two-way Interaction effect between Gender and Employment Status on the scores of Anxiety



Gender × Education

Table 7.4

Results of t-test among different cell means in terms of Depression

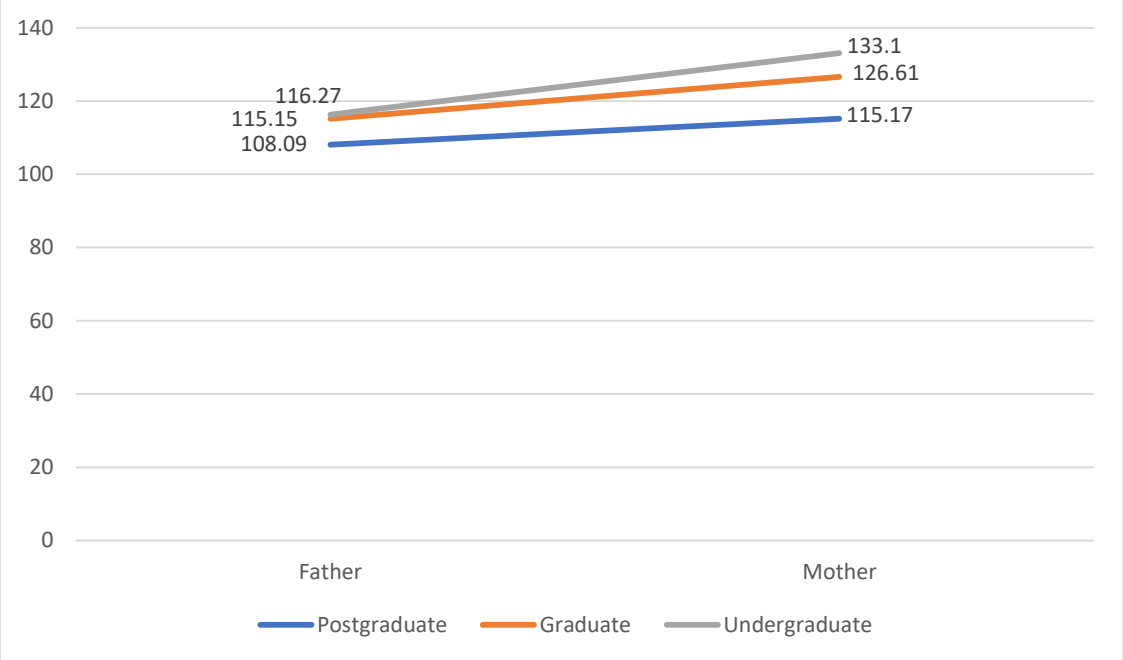
Compared Variables	Father					Mother				
	N	Mean	*SD*	*df*	*t*-ratio	*N*	Mean	*SD*	*df*	*t*-ratio
Postgraduate &	45	108.09	42.56	104	-3.097**	35	115.17	11.19	90	-4.99***
Graduate	61	115.15	10.84			57	126.61	10.35		
Postgraduate &	45	108.09	12.56	80	-3.25**	35	115.17	11.19	82	-8.47***
Undergraduate	37	116.27	9.65			49	133.10	8.22		
Graduate &	61	115.15	10.84	96	-.518	57	126.61	10.35	104	-3.53**
Undergraduate	37	116.27	9.65			49	133.10	8.22		

Note. $^{**}p < .01$, $^{***}p < .001$

Table 7.4 shows a highly significant difference in depression between postgraduate and graduate, postgraduate, and undergraduate group of father. Here, postgraduate fathers expressed lower levels of depression than the graduate and undergraduate fathers. But no significant difference is found between graduate and undergraduate fathers. This table also revealed statistically significant differences in depression between postgraduate and graduate, postgraduate and undergraduate, and graduate and undergraduate mothers. Here, postgraduate mothers reportedly experienced lower levels of depression as compared to their counterparts.

Figure 7

Showing Two-way Interaction effect between Gender and Education on the scores of Depression



Gender × Income

Table 7.5

Results of t-test among different cell means in terms of Depression

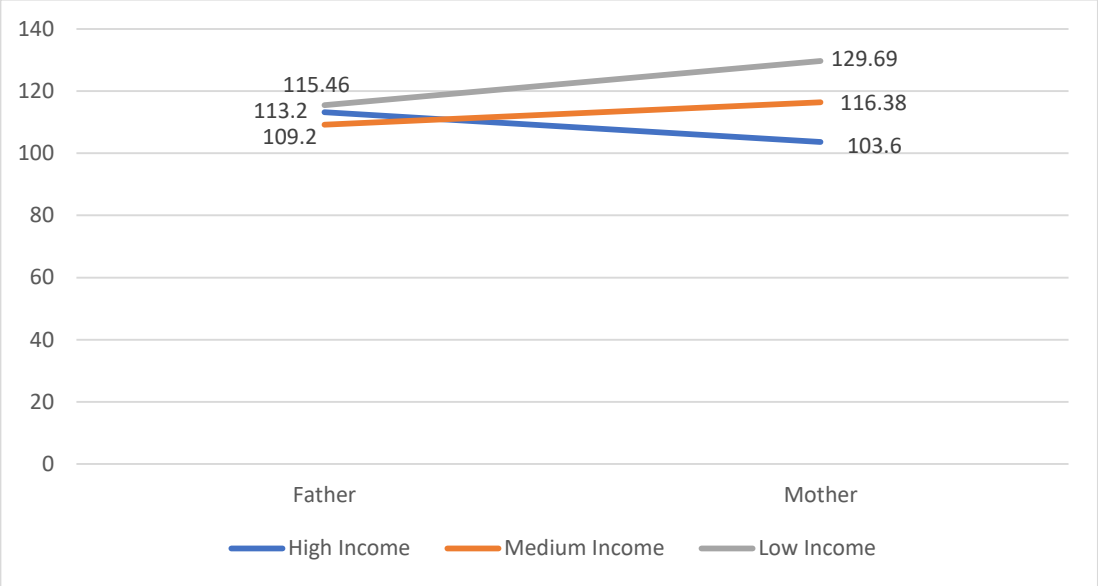
Compared Variables	Father					Mother				
	N	Mean	*SD*	*df*	*t*-ratio	*N*	Mean	*SD*	*df*	*t*-ratio
High-income & Medium Income	20 44	113.20 109.20	15.86 11.96	62	1.116	5 29	103.60 116.38	10.21 11.72	32	-2.29*
High-income & Low-income	20 79	113.20 115.46	15.86 9.5	97	-.816	5 107	103.60 129.69	10.21 9.31	110	-6.11***
Medium Income & Low-income	44 79	109.20 115.46	11.96 9.5	121	-3.18**	29 107	116.38 129.69	11.72 9.31	134	-6.45***

Note. *$p < .05$, **$p < .01$, ***$p < .001$

Table 7.5 showed the differences in depression among different levels of income groups of parents with autistic children. Here, the significant difference is found between medium income and low-income fathers where low-income fathers expressed significantly more depression. This table also indicated significant differences in depression between mothers from high and medium income groups. On the other hand, the difference in depression between high-income and low-income mothers, medium income, and low-income mothers are highly significant. This result reveals that mothers with high-income group express lower levels of depression than that of medium and low-income groups.

Figure 8

Showing Two-way Interaction effect between Gender and Income on the scores of Depression



Gender × Employment Status

The interaction effects (presented in Table 07) between gender and employment are statistically significant ($p < .05$). Comparisons are also made among different cell means.

Table 7.6

Results of t-test among different cell means in terms of Depression scores

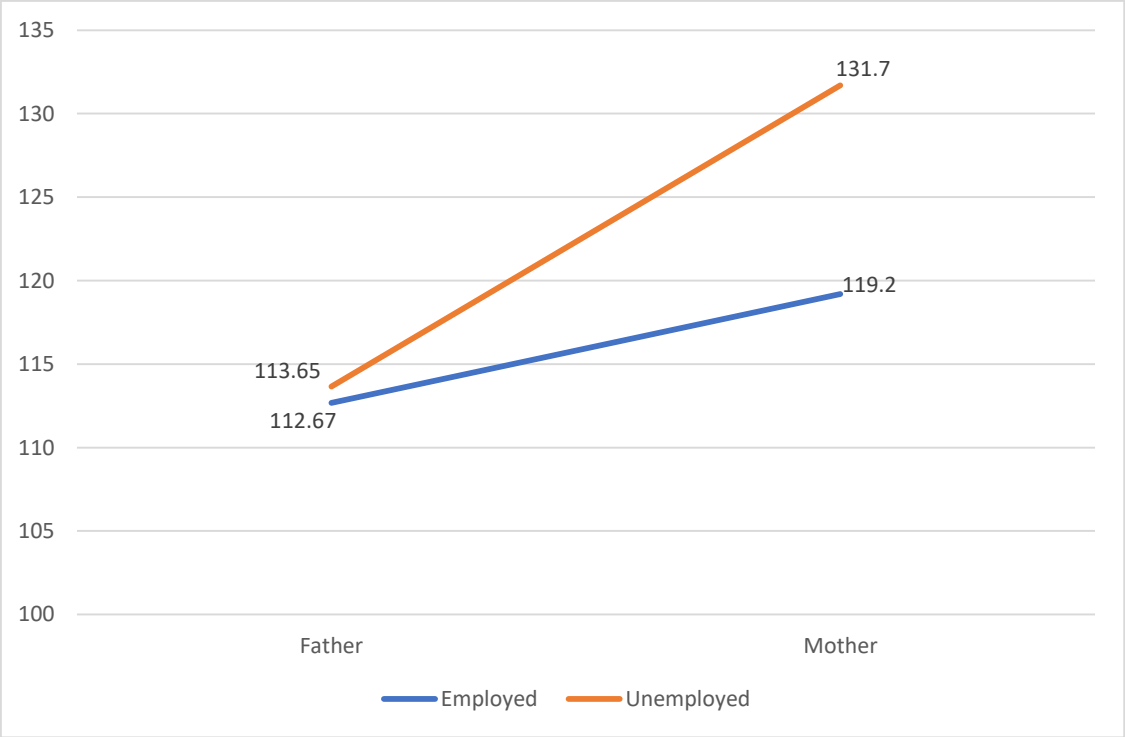
Variables	Employment condition	*N*	Mean	*SD*	*t*
Father	Employed	63	112.67	12.85	-.502
	Unemployed	80	113.65	10.57	
Mother	Employed	64	119.20	11.94	-7.20***
	Unemployed	77	131.70	8.63	

Note: *** $p < .05$

Table 7.6 showed the differences among different levels of employment conditions of parents with autistic children. Here, significant difference is found between employed and unemployed mothers where employed mothers expressed lower levels of depression than the unemployed mothers.

Figure 9

Showing Two-way Interaction effect between Gender and Employment Status on the scores of Depression



Education × Income

Table 7 shows that a two-way interaction effect among education and income are statistically significant ($p < .01$, $p < .05$, $p < .001$). The results of the t-test among different cell means have been presented in Table 7.7

Table 7.7

Results of t-test among different cell means in terms of Depression scores

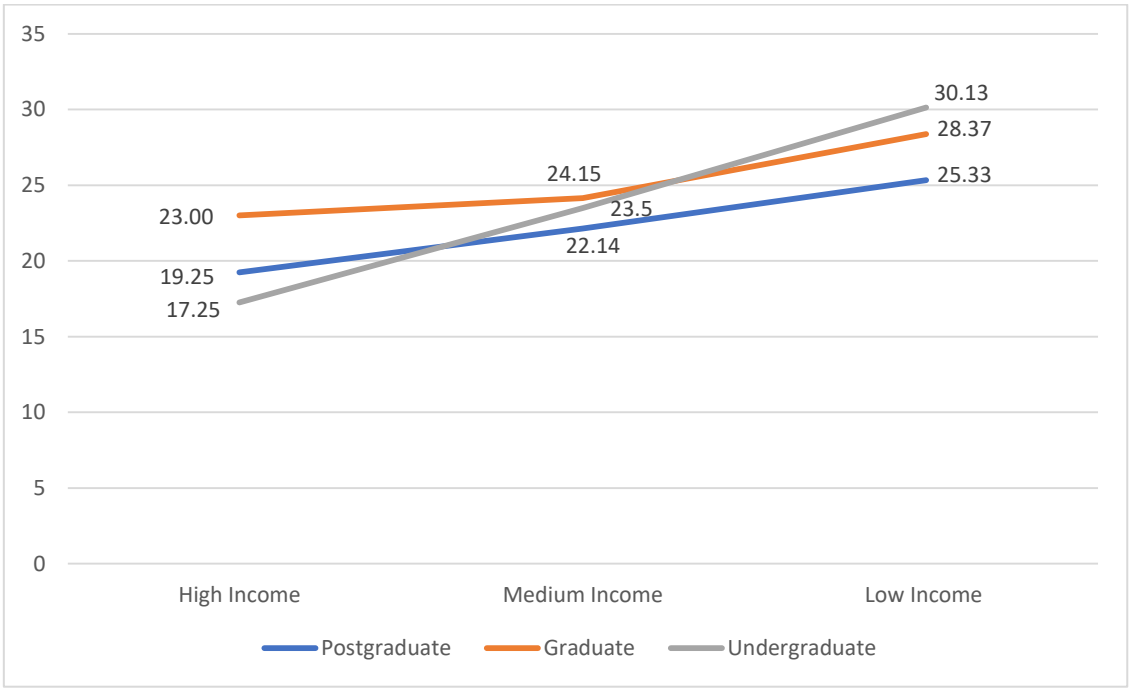
SL	Compared Variable	High-income				Mid. Income				Low-income			
		N	Mean	*SD*	*t*-ratio	*N*	Mean	*SD*	*t*-ratio	*N*	Mean	*SD*	*t*-ratio
1.	Postgraduate & Graduate	16 5	19.25 23.00	3.15 4.74	-2.06	37 34	22.14 24.15	4.53 6.00	-1.60	27 79	25.33 28.37	5.10 5.24	-2.61*
2.	Postgraduate & undergraduate	16 4	19.25 17.25	3.15 2.22	1.19	37 2	22.14 23.50	4.53 2.12	-.42	27 80	25.33 30.13	5.10 5.99	-3.73***
3.	Graduate & undergraduate	5 4	23.001 17.25	4.74 2.22	2.22	34 2	24.15 23.50	6.00 2.12	.15	79 80	28.37 30.13	5.24 5.99	-1.97

Note. *$p < .05$, ***$p < .001$

Results presented in Table 7.7 showed that postgraduate parents come from low-income group expressed lower levels of depression than that of graduate parents. Again, there is also found highly significant difference in depression between postgraduate and undergraduate groups in case of low-income group. Here, postgraduate parents also expressed lower levels of depression than under-graduate parents.

Figure 10

Showing Two-way Interaction effect between Education and Income on the scores of Depression



Gender × Education × Income

Table 7 shows that a three-way interaction effect among gender, education, and income are statistically significant ($p < .01$). The results of the t-test among different cell means have been presented in Table 7.8.

Table 7.8

Results of t-test among different cell means in terms of Depression

SL	Compared Variable	High-income				Mid. Income				Low-income			
		N	Mean	*SD*	*t*-ratio	*N*	Mean	*SD*	*t*-ratio	*N*	Mean	*SD*	*t*-ratio
1.	Father Post-graduate & Father Graduate	12	105.42	14.75	-1.79	19	105.58	10.03	-1.836	14	113.79	12.63	-.85
		4	119.75	10.05		23	112.35	13.22		34	116.50	8.84	
2.	Father Post-graduate & Father Under-graduate	12	105.42	14.75	-3.22**	19	105.58	10.03	-.264	14	113.79	12.63	-.393
		4	130.00	4.39		2	107.50	3.54		31	115.06	8.81	
3.	Father graduate & Father Under-graduate	4	119.75	10.05	-1.87	23	112.35	13.22	.51	34	116.50	8.84	.66
		4	130.00	4.39		2	107.50	3.54		31	115.06	8.81	
4.	Mother Post-graduate & Mother Graduate	4	106.50	9.11	1.42	18	112.56	11.13	-2.44*	13	121.46	8.96	-2.47*
		1	92.00	—		11	122.64	10.24		45	128.36	8.85	
5.	Mother Post-graduate & Mother Under-graduate	4	106.50	9.11	—	18	112.56	11.13	—	13	121.46	8.96	-4.46***
		—	—	—		—	—	—		49	133.10	8.22	
6.	Mother graduate & Mother under-graduate	1	92.00	—	—	11	122.64	10.24	—	45	128.36	8.85	-2.69**
		—	—	—		—	—	—		49	133.10	8.22	
7.	Father post-graduate & Mother post-graduate	12	105.42	14.75	-.14	19	105.58	10.03	-2.01	14	113.79	12.63	-1.81
		4	106.50	9.11		18	112.56	11.13		13	121.46	8.96	
8.	Father graduate & Mother graduate	4	119.75	10.05	2.47	23	112.35	13.22	-2.27*	34	116.50	8.84	-5.90***
		1	92.00	—		11	122.64	10.24		45	128.30	8.85	
9.	Father undergraduate and Mother undergraduate	4	130.00	4.40	—	2	107.50	3.34	—	31	115.06	8.81	-9.30***
		—	—	—		—	—	—		49	133.10	8.22	

Note. *$p < .05$, **$p < .01$, ***$p < .001$, (—) = indicates that there is no available data.

Table 7.8 presents that in case of high-income groups, a significant difference is found between postgraduate and undergraduate fathers where postgraduate fathers have reportedly experienced lower levels of depression. On the other hand, significant difference is also found between postgraduate and graduate mothers where postgraduate mothers reported having lower levels of depression for belonging in the medium and low-income groups. This table also revealed significant differences in depression between postgraduate and undergraduate, and graduate and undergraduate mothers, where undergraduate mothers have experienced more depression. The results presented in Table 7.8 showed that graduate fathers from the medium income group have experienced lower levels of depression than that of the graduated mothers from the same group. Again, this table also revealed highly significant differences in depression between graduate fathers and mothers and between undergraduate fathers and mothers. Here, graduate fathers have reportedly experienced lower levels of depression than the graduate mothers and likewise, undergraduate fathers have signs of experiencing lower levels of depression than that of the undergraduate mothers.

Figure 11

Showing Three-way Interaction effect among Gender (Father), Education and Income on the scores of Depression

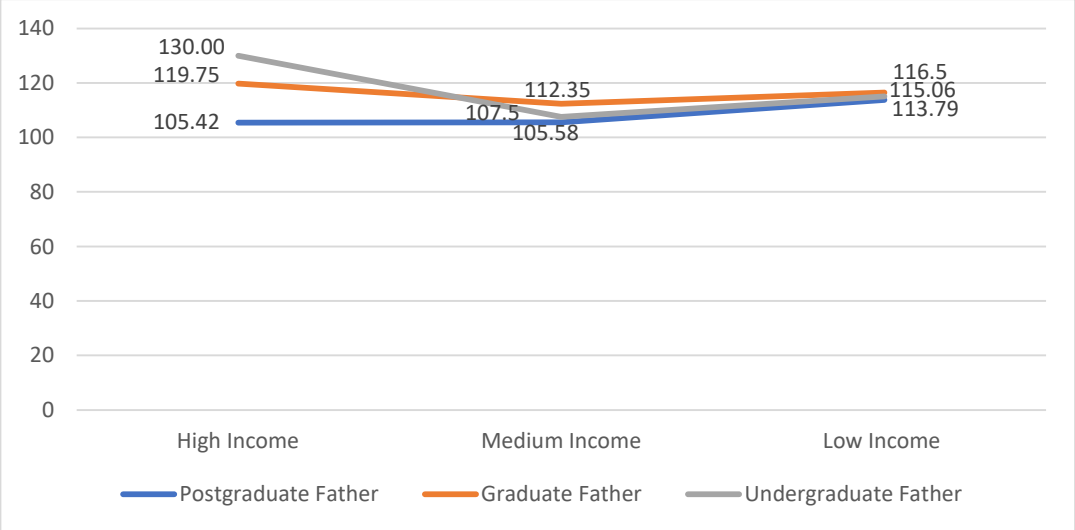


Figure 12

Showing Three-way Interaction effect among Gender (Mother), Education and Income on the scores of Depression

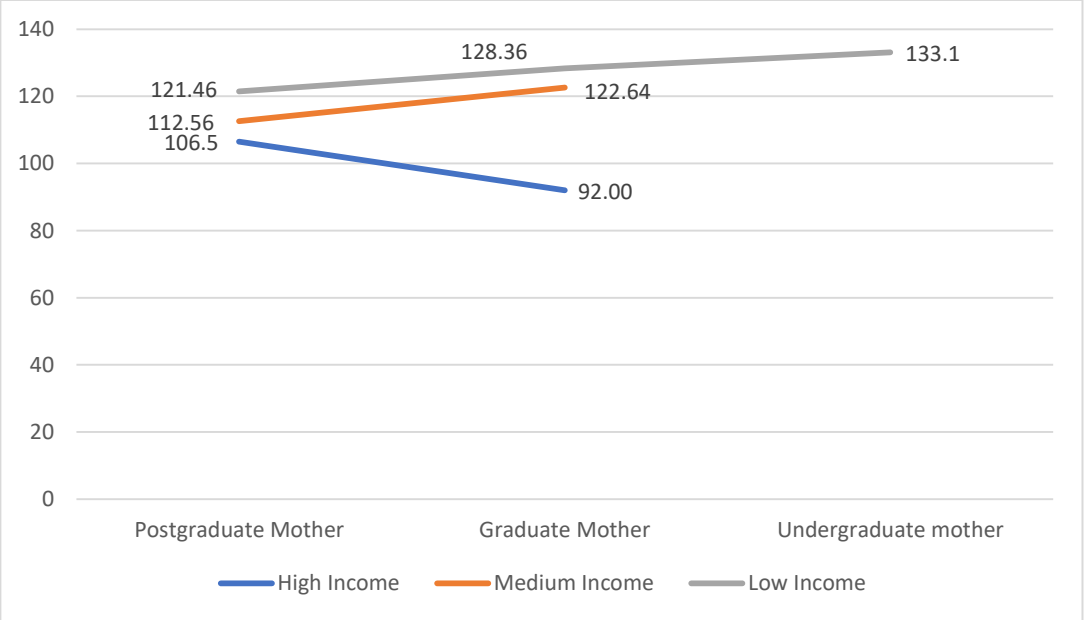
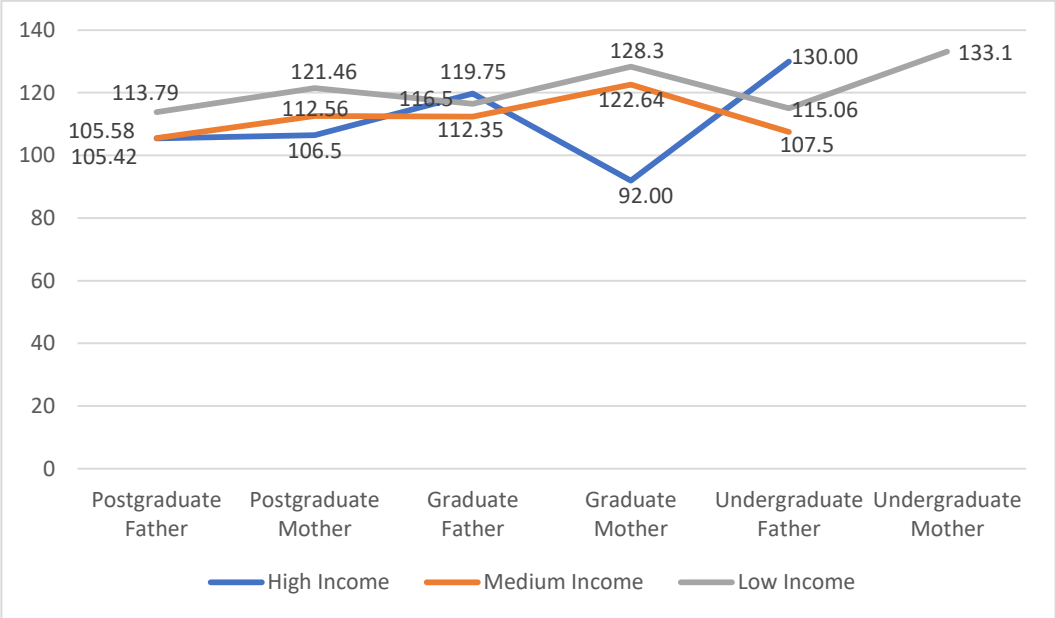


Figure 13

Showing Three-way Interaction effect among Gender, Education and Income on the scores of Depression



Education × Income × Employment Status

Table 7 shows that a three-way interaction effect among education, income, and employment are statistically significant ($p < .05$). The results of the t-test among different cell means have been presented in Table 7.9.

Table 7.9

Results of t-test among different cell means in terms of Depression scores

SL	Compared Variable	High-income				Mid. Income				Low-income			
		N	Mean	*SD*	*t*-ratio	*N*	Mean	*SD*	*t*-ratio	*N*	Mean	*SD*	*t*-ratio
1.	Postgraduate employed & Graduate employed	8 3	101.13 115.33	8.31 20.31	-1.74	33 23	109.61 115.43	11.09 12.75	-1.82	12 30	116.50 121.33	12.09 9.83	-1.35
2.	Postgraduate employed & undergraduate employed	8 2	101.13 133.50	8.31 2.12	-5.25***	33 —	109.61 115.43	11.09 —	—	12 16	116.50 124.69	12.09 10.12	-1.95
3.	Graduate employed & undergraduate employed	3 2	115.33 133.50	20.31 2.12	-1.19	23 —	103.75 116.18	12.75 —	—	30 16	121.33 124.69	9.83 10.12	1.09
4.	Postgraduate unemployed & Graduate unemployed	8 2	110.25 112.50	16.17 9.19	-.184	4 11	103.75 116.18	10.21 14.51	-1.56	15 49	118.27 124.43	11.35 10.95	-1.89
5.	Postgraduate unemployed & undergraduate unemployed	8 2	110.25 126.50	16.16 2.12	-1.36	4 2	103.75 107.50	10.21 3.54	-.480	15 64	118.27 126.47	11.35 12.71	-2.29*
6.	Graduate unemployed & undergraduate unemployed	2 2	112.50 126.50	9.19 2.12	-2.09	11 2	116.18 —	14.51 3.53	.814	49 64	124.43 126.47	10.95 12.70	-.897

Note. *$p < .05$, *** $p < .001$, (—) = indicates that there is no available data.

Table 7.9 shows that in case of high-income group, significant difference is found between postgraduate employed and undergraduate employed groups. Here, the postgraduate employed from the high-income group experience lower levels of depression. This table also indicates that in case of low-income group, significant difference is found between postgraduate unemployed and undergraduate unemployed groups where postgraduate unemployed parents expressed lower levels of depression.

Figure 14

Showing Three-way Interaction effect among Education, Income and Employed Parents Status on the scores of Depression

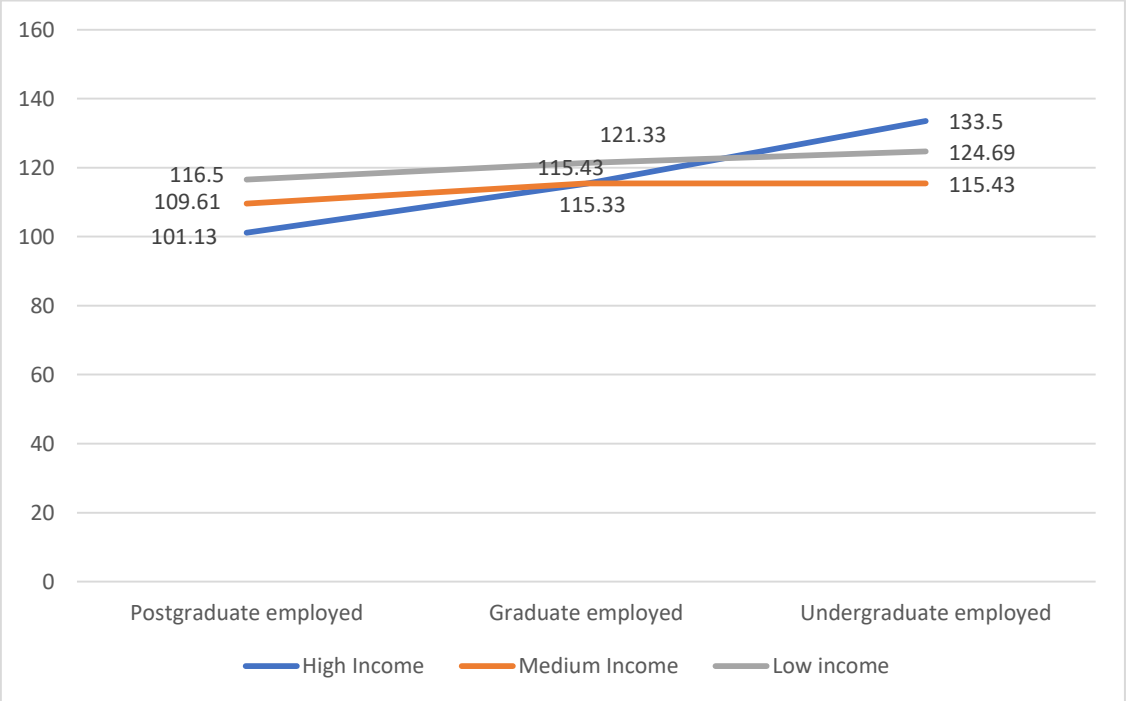
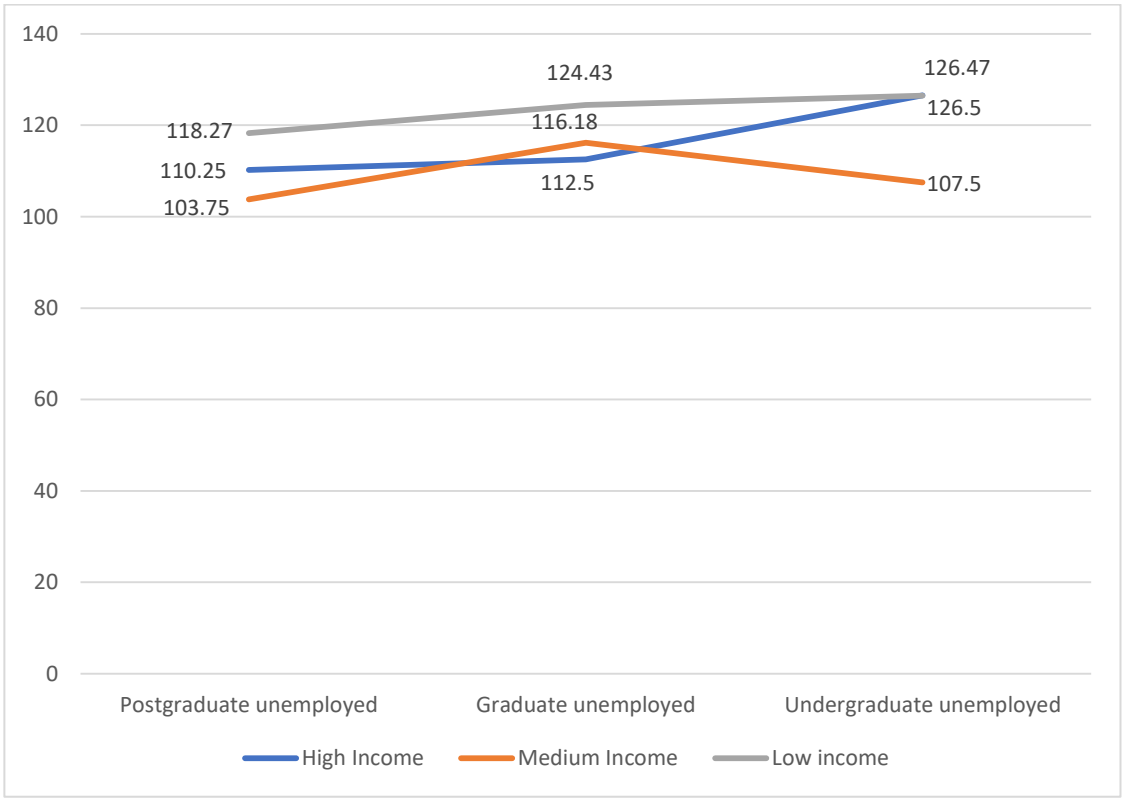


Figure 15

Showing Three-way Interaction effect among Education, Income and Unemployed Parents on the scores of Depression



CHAPTER FOUR
DISCUSSION

Discussion

The present study was designed to examine six research objectives. To measure the variables of the present study, three questionnaires were applied upon 534 (284 were parents with autistic children and 250 parents with non-autistic children) parents were selected from different districts of the Rajshahi division in Bangladesh. The obtained data were analyzed by applying independent sample *t*-test, four-way ANOVA, and MANOVA respectively. Results have been presented in Tables 3 to 11.

The ***first*** objective was to examine whether there is any difference in anxiety, depression, and stress between parents with and without autistic children. Results presented in Table 5 indicated that there were significant differences between parents having autistic children and non-autistic children in terms of anxiety, depression, and stress. Table 5 suggested that parents with autistic children reported having lower mental health than that of their counterparts. Results can be explained in accordance with past studies. For example, Almansour et al. (2013) had conducted a retrospective cohort study to observe the Saudi Arabian context. They stated that the parents of autistic children have expressed having more anxiety and depression than the parents of non-autistic children. A few studies also reported that the parents with children having autism and other developmental disorders are more prone to experience a lower quality of life, higher depression, and pessimism regarding the future than the parents of non-autistic children (Cappe et al., 2011; Johnson et al., 2011; Mak & Kwok, 2010).

The result can be also explained from theoretical perspectives. This result is congruent with different social comparison theories. In accordance with social comparison theories, the majority of the individuals get exposed to higher levels of mental satisfaction when they find themselves in a better position than the individuals

in comparison. We do not know till now why the majority of the individuals of particular nations have shown positive markers of mental satisfaction. This is perhaps occurring because most of the people lead their lives with a positive attitude due to the comparatively favorable conditions they live in and that their biological factors have much contribution to the formations of that positive state of being. In addition, according to the social comparison theories, almost all individuals consider anybody else other than themselves as standards. Mental satisfaction occurs when the individual, in the process of comparing her/his own conditions with others, feels better than that of the compared (Carp & Carp, 1982; Emmons et al. 1983; Michalos, 1980). Parents with autistic children cannot lead their lives in the usual manners as we typically know it. In contrast, parents of non-autistic children cannot experience the adversities and degrees of circumstances to the extent the parents with autistic children are experiencing.

The ***second*** objective was to explore whether there is any difference in anxiety, depression, and stress between the mothers and fathers of autistic children. Results presented in Table 9 indicated that there were significant differences between fathers and mothers with autistic children in case of experiencing anxiety, depression, and stress. Results also indicated that mothers showed higher anxiety, depression, and stress than that of their counterparts. These findings are supported by various studies conducted earlier. For instance, Sabih and Sajid (2008) had studied the correlation in parental stress and autistic children. The study had showed that parents of autistic children are reportedly experiencing higher levels of stress. The findings also indicated that mothers showed more stress than fathers of autistic children. Dabrowska and Pisula (2010) had conducted a similar study which revealed that the parents of autistic children had reportedly experienced higher levels of stress than the parents of children

with Down syndrome. The results depicted that the mothers of autistic children are experiencing high amounts of stress than the fathers. Faisal (2015) also explored parental depression and anxiety and the impact of rearing autistic children. The research involved Beck Depression Inventory (BDI) and the Beck Anxiety Inventory (BAI) were the questionnaires used to collect data. Results showed that parents with autistic children have expressed having greater depression and anxiety. The finding also recognizes that mothers are reportedly experiencing more anxiety than that of the fathers of autistic children. This finding was also consistent with some previous researches (Nouri, 2009; Sharpley et al., 1997; Tarabek, 2011) that had indicated towards the significantly poorer mental health status of mothers of autistic children. Mothers become more emotionally affected (Gray, 2002) and more stigmatized (Gray, 1993) by the autistic conditions of their children. They feel the utmost guilt and blame themselves for their children's conditions (Tarabek, 2011). In Bangladesh, mothers are usually the primary caregivers for both typically developing children and the ones with special needs. They have to adjust their environment and their communication to suit their children's needs and get more intimately involved in solving problems experienced by the children. They experience more anxiety, depression, and stress than the fathers. Moreover, in some cases, the father figures abandon the families, leaving all responsibilities of the children upon the mothers. That is why mothers of autistic children have reported experiencing a significantly poor mental health.

The ***third*** objective was to examine whether anxiety, depression, and stress vary according to the educational qualifications of the parents of autistic children. Results presented in Table 7.1 indicated that, there are significant differences in the experiences of anxiety, depression and stress of the parents who belong or have surpassed different

phases of education, such as: post-graduation, graduation and under-graduation levels. In other words, Table 7.1 indicates that in cases of anxiety, depression, and stress, postgraduate parents have higher mental health than that of the graduate and undergraduate parents, and graduate parents have higher mental health than undergraduate parents. So, it can be said that undergraduate parents are vulnerable to higher risks of ill mental health. These findings are consistent with the findings of previous studies. For example, Kausar et al. (2019) had researched upon stress in parents of children with ASD and the socio-demographic variables. The 251 parents involved in this study were selected from five cities in Pakistan. A 'Parental Perceived Stress Scale' was used to collect the data. The results of this study indicated that parents' education, monthly income, age, and gender of special children were contributing factors to parental stress. In addition, Zhou et al. (2019) conducted a study in China on the emotional problems in the mothers of autistic children and their correlation with socioeconomic status and the main symptoms in the children. The finding of the study indicated that mothers of autistic children have reported experiencing higher anxiety and depression. Findings also revealed that the mothers with junior high school level education were significant sufferers of depression. Here researchers also argued that higher levels of education can ensure better mental health as education can enhance people's knowledge, awareness, understanding, problem solving skills, and empower better coping mechanisms. Education helps one to get jobs that are better and more secured and allow families to accumulate capital that can be used to improve health (Mirowsky & Ross, 2008). Parents may have lack of awareness about the availability of services for their children with autism due to their lack of

knowledge or low level of education and awareness. They may also worry about management including concern about the medical treatment of their children, the expected course of illness, prognosis, and eventual quality of life due to the lack of proper education and access to information.

This result is also consistent with context theories. Context theories addressed that mental health is occurred by the fulfillment of universal as well as basic needs. He also mentioned that individuals will be satisfied when their warmth, hunger, and thirst are met. So, we mentioned that education is one of our important basic needs. People who have or are about to complete higher education are found to be in better mental health than those who have access to education not more than the entry/primary levels.

The ***fourth*** objective was to explore whether anxiety, depression, and stress differ according to the family income of parents of autistic children. Results indicated that income is statistically significant in terms of stress (Table 7). Table 7.2 also indicates that in case of stress, parents from the high-income group express lower stress levels than the parents from medium and low-income groups as well as parents from medium income group have experienced lower levels of stress than the parents from the low-income group. So, parents who have autistic children and belong to the low-income group experience higher levels of stress. This result is supported by the evidences from prior researches. For instance, Soltanifar et al. (2015) showed that there is a significant connection between parental stress and socio-demographic variables. Results specifically indicated that lower education and lower income levels were significantly related to the stress of parents with autistic children. Similarly, Herlihy (2010) examined the relationship between parental stress in those with toddlers having ASD and the socio-demographic factors in play. The results of this study indicated that

families belonging in the low-income groups have experienced elevated parental stress. Results depicted that annual income was found to be a regulator of the relationship between parenting stress and symptom severity. Researchers also argued that the diagnosis of a child with ASD was associated with lifetime costs to an individual, their family, and the community. The expenditure obstacles are often seen prior to diagnosis because if diagnosed, a family can decline from middle-income to low-income group in matters of months of treatment. The financial burden related to the treatment and management itself is a significant reason of anxiety, depression and stress in parents with children having ASD.

This result is also related to economic theory. According to economic theory, higher levels of mental health or mental satisfaction are associated with higher levels of income. Income and mental health are positively correlated. This means, in contrast, that lower income level is also related to lower mental health. For instance, Easterlin (1974) had proposed that standards can help determine the impacts of income upon mental health. This standard will vary through time for a person's alterations in social comparison, changes in expectations, etc. So, it is important here to describe that individual's present and earlier economic conditions are closely related to an individual's mental wellness (Meadow, 1992).

In addition, Venhoveen (1988, 1991) had discussed the connection between one's mental health and their fulfillment of fundamental necessities. Individuals with high income fulfill their fundamental necessities like food, health, shelter rather easily than those not from the middle or low income group. Fulfillment of basic needs ensures amelioration of mental health.

Social comparison theories are also related to this finding. In accordance with social comparison theories, Easterlin (1974) had mentioned observing similar characteristics of collective mental health in different nations from similar status quo because the conditions of the individual civilians, for instance, income, is inseparably connected to the national economy or any collective attribute or limitation. It is evident that people from lower income groups experienced lower mental satisfaction than those from the higher-income groups. Similarly, adaptation theory reported that an individual's changes in income level plays a significant role regarding mental satisfaction.

The ***fifth*** objective was to examine whether anxiety, depression, and stress vary according to the employment statuses of parents of autistic children. The results of this study showed that there is no significant difference in anxiety, depression, and stress in terms of employment status of the parents of autistic children (Table 7). Conversely, previous research findings reported that there was a significant and varying relationship between employment statuses and anxiety, depression, and the stress of parents of autistic children. For example, Gray (2002) had made a longitudinal study which indicated that lower status of employment (e.g., job type or the number of hours worked) and lack of exterior employability was deeply correlated to anxiety, depression, and stress in the mothers of children with autism. The care of children with autism demands high financial resources regarding regular follow-ups and medications. For instance, Lawoko and Soares (2002) found that parents of children with chronic diseases had greater financial problems because these parents have more daily expenditures to tackle such conditions and ensure management than the parents of healthy children. Financial stressors also increase significantly with insufficient income

as one parent may need to stay at home to care for the child while the other works outside (Al-Farsi et al., 2016). Thus, the general financial instability among families of children with autism which requires the parents to go through different financial challenges and this is a potent explanation of why these parents are likely to be more vulnerable to parental stress.

The ***sixth*** objective was to investigate the interaction effects of education, income, and employment status on anxiety, depression, and the stress of parents of autistic children. Table 7 suggested that the interaction effects among gender, education, employment status are statistically significant when studying depression in this particular domain of study. Again, interaction effects of gender and employment status were statistically significant in terms of anxiety. These findings are supported by earlier studies. For example, Athari et al. (2013) revealed that different income levels were key to inducing or elevating depression and stress in mothers of autistic children. Results suggested that the severity of autism in children had a significantly negative impact upon the income levels of mothers and thereby it increased depression and stress in the mothers. Some studies also reported that low family income was the indicator of psychological health disorders, and mental disorders like depression, anxiety, etc (Inaba et al., 2005; Levy & O'Hara, 2010; Wadsworth et al., 2008). In addition, unemployed parents suffered from more anxiety, depression, and stress due to their beloved children's health conditions. The result is also supported by previously found evidences (Fergusson et al., 2014; McKee-Ryan et al., 2005; Paul & Moser, 2009; Pelzer et al., 2014). Regarding the interaction effect of gender and employment status, previous findings documented that parents having children with ASD adversely influenced their professional performances. Mothers having a child with autism

spectrum disorder reduced the number of hours of market work per week and the number of months of market work in the previous year than that of their counterparts as well as causing a negative impact upon their mental health (McCall & Starr, 2016). Similarly, Falk et al. (2014) documented that parental socioeconomic factors were significantly related to mental health problems such as anxiety, depression and stress in the parents of autistic children.

Limitations

In the present study, data were collected from different districts of the Rajshahi division in Bangladesh. It was indeed a challenging task to collect data from parents with autistic children. They were very conservative to disclose personal information and it was a great challenge to convince them to participate in the data collection processes to fill up the scales. Apart from refusals from their end, parents belonging to lower educational qualification groups did not understand the questionnaires themselves. Most of the parents with autistic children did not provide available time to fill up the bulk amount of data forms. The acknowledged challenges and their consequences can be identified as the primary limitation of the study. **The second** limitation of my study was the fact that I base my conclusions on a relatively small sample. It will be important for future studies to work with larger samples and a great number of parents of autistic children. **The third** limitation of this study could be limited to availabilities of articles and journals relating to the mental health status of parents with autistic children regarding the conditions of education, income, and employment status in the Indian subcontinent as well as Bangladeshi culture. Since this is only a preliminary study, therefore the small sample size may not represent the whole population of Bangladesh. I took a small sample from different districts of the Rajshahi

division for my intention was to set Rajshahi as the demographic context and observe all aspects concerning this research. **The fourth** limitation was that most of the respondents reported that their stress, depression, and anxiety levels as quite elevated and that had produced biases in results hence making the development of the discussion challenging. **The fifth limitation** was the resources of the present study such as time, finance, manpower was also very shallow, thus data collection had been hampered and results were affected. **Finally**, this study only focused on the negative domains of mental health of the parents of autistic children and does not include the positive domains such as psychological well-being, life satisfaction, happiness and aspirations in the parents of autistic children. Future researches will be much wider in covering this domain of study if these limitations are tackled with better resources and strategies to draw contextual conclusions and open more opportunities of fruitful research and implementations.

Conclusion and Implications

We may say that having children with autism adversely affects the parents' lives. The nature of the disability influences the psychological well-being of the parents. The majority of the parents having children with autism in Bangladesh are suffering from anxiety, depression, and stress, especially the mothers of children with autism spectrum disorder are in the clinical range of anxiety, depression, or stress, which is alarming. Parents' levels of education, income, and employment status play an essential role in maintaining sound mental health and these determine one's perceived positions in a social hierarchy. An individual with autism and his family needs positive support and they need to know that they are respected as individuals and as human beings. Counseling, psychotherapy, and training can help parents to overcome stress, anxiety, and sadness and learn healthy coping strategies. Similarly, an ongoing education

program, cost-effective services can be promoted to reduce the gaps in parental knowledge and to strengthen coping strategies and adjustment proficiency in the families. Future studies should report evidence-supported mental health interventions for enhancing the psychological well-being of the children affected by ASD and their parents and families. The findings of the present study can be beneficial resources for the parents, caregivers, and family members, as well as the mental health practitioners, to understand how the levels of education, income, and employment status can influence the mental health of parents with children with special needs. This understanding will help them to take the required actions to deal with mental health issues effectively. However, the findings of this study have strong implications on theory, research, policy, and practice about the mental health of parents of autistic children.

Finally, we recommend that mental health professionals like psychiatrists, psychologists, social workers, therapists, as well as nurses who are employed in institutions dedicated to autistic children and autism management should be qualified on managing the treatments concerning anxiety, depression, and stress experienced by parents with autistic children. We also recommended that the Bangladesh Government and different Non-Government Organizations (NGOs) should take more effective initiatives to help those families with children having neurodevelopmental disorders, especially autism.

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APPENDICES

Appendices

Appendix-A

নির্দেশনাবলী

আমি অটিস্টিক শিশুদের পিতা-মাতার মানসিক স্বাস্থ্য বিষয়ে একটি গবেষণার কাজে আপনার সহযোগিতা কামনা করছি। এখানে আপনার জীবন-যাত্রা সম্পর্কে কিছু প্রশ্নমালা দেয়া আছে। প্রত্যেকটি প্রশ্নের জন্য ডানপাশে সম্ভাব্য পাঁচটি বিকল্প উত্তর দেয়া আছে। আপনি প্রত্যেকটি প্রশ্নের জন্য পাঁচটি বিকল্প উত্তর থেকে আপনার জন্য প্রযোজ্য যে কোন একটিতে টিক চিহ্ন (✓) দিয়ে আপনার মতামত প্রকাশ করবেন। দয়া করে প্রতিটি প্রশ্নের উত্তর দিবেন। আপনার মতামত ও ব্যক্তিগত তথ্যাবলি শুধুমাত্র গবেষণার কাজে ব্যবহার করা হবে এবং তা গোপন রাখা হবে। আপনার সহযোগিতার জন্য ধন্যবাদ।

ব্যক্তিগত তথ্যাবলি

আইডি নং ঃ

লিঙ্গ ঃ

বয়স ঃ

বর্তমান পারিবারিক আয় (মাসিক) ঃ

শিক্ষাগত যোগ্যতা ঃ

চাকুরীর অবস্থা ঃ ☐ চাকুরীজিবী ☐ চাকুরীজিবী নয়

চুকুরীজিবী হলে ঃ ☐ সরকারী ☐ বেসরকারী ☐ আধা-সরকারী

☐ স্বায়ত্বশাসিত ☐ অন্যান্য

চাকুরীজিবী না হলেঃ ☐ গৃহিণী ☐ কৃষি ☐ ব্যবসা ☐ অন্যান্য

আপনার কত জন সন্তান আছেঃ ☐ এক ☐ একাধিক

আপনার সন্তানদের মধ্যে কতজনের অটিস্টিক সমস্যা আছেঃ ☐ একজনের ☐ একাধিক জনের

কত দিন ধরে আপনার বাচ্চা এই সমস্যায় ভুগছে? ☐ ছয় মাসের কম ☐ ছয় মাসের বেশী

আপনি কি কখনো নিজেকে ভাল রাখার জন্য কোন ধরণের মানসিক স্বাস্থ্য সেবা গ্রহন করেছেন? ☐ হ্যাঁ ☐ না

যদি হ্যাঁ হয় তবে, কি ধরণের মানসিক স্বাস্থ্য সেবা গ্রহণ করেছেন? .....

Appendix B

উদ্বেগ বা Anxiety পরিমাপনের মানক

এই বিবৃতিগুলো আপনার ক্ষেত্রে প্রযোজ্য কি না যাচাই করাই আমাদের উদ্দেশ্য। লক্ষ্য করুন প্রতিটি বিবৃতির পাশেই সম্ভাব্য পাঁচ ধরণের উত্তর দেয়া আছে। এগুলো হলো- 'একেবারেই হয় না', 'খুব সামান্য হয়', 'মোটামুটি হয়', 'বেশী হয়', 'অনেক বেশী হয়'। প্রশ্নমালায় প্রদত্ত বামপার্শ্বের বিবৃতিগুলো পড়ে গত এক মাসের মধ্যে এই বিবৃতি গুলো আপনার ক্ষেত্রে কতটা প্রযোজ্য তা বিবৃতির ডানপার্শ্বের সম্ভাব্য পাঁচটি উত্তরের যেটি প্রযোজ্য সেটির ঘরে টিক (✓) চিহ্ন দিয়ে নির্দেশ করুন। এই পাঁচটি উত্তরের মধ্য থেকে যে কোন একটিকে বেছে নিন এবং সবগুলো প্রশ্নের উত্তর দিন। অনুগ্রহ করে লক্ষ্য করুন সবগুলো বিবৃতির উত্তর দিয়েছেন কি না। আপনার সহযোগীতার জন্য ধন্যবাদ।

বিবৃতি সমূহ	একেবারেই হয় না (০)	খুব সামান্য হয় (১)	মোটামুটি হয় (২)	বেশি হয় (৩)	অনেক বেশি হয় (৪)
১. আমার ঘনঘন শ্বাস পড়ে					
২. আমার দমবন্ধবোধ হয়					
৩. আমার বুক ভার ভার লাগে					
৪. আমার বুক ধড়ফড় করে					
৫. আমি বুকে ব্যথা অনুভব করি					
৬. আমার গা/হাত-পা শিরশির করে					
৭. আমার হাত/পা কাঁপে					
৮. আমার হাত/পা অবশ লাগে					
৯. আমার হাত/পা-জ্বালাপোড়া করে					
১০. আমার মাথা ঝিমঝিম করে					
১১. আমার মাথা ঘোরে					
১২. আমার মাথা ব্যথা করে					

বিবৃতি সমূহ	একেবারেই হয় না (০)	খুব সামান্য হয় (১)	মোটামুটি হয় (২)	বেশি হয় (৩)	অনেক বেশি হয় (৪)
১৩. আমার মাথা থেকে গরম ভাপ ওঠে					
১৪. আমার গলা শুকিয়ে যায় ও পিপাসা লাগে					
১৫. আমি অসুস্থ হয়ে যাবো এমন মনে হয়					
১৬. আমি আমার স্বাস্থ্য নিয়ে চিন্তিত থাকি					
১৭. আমি দুর্বলবোধ করি					
১৮. আমার হজমে অসুবিধা হয়					
১৯. আমার পেটে অস্বস্থি লাগে					
২০. আমার বমি বমি লাগে					
২১. আমার খুব ঘাম হয় (গরমের জন্য নয়)					
২২. আমি আরাম করতে পারি না					
২৩. আমার সামাজিক পরিবেশে কথা বলতে অসুবিধা হয়					
২৪. একই বিষয় নিয়ে আমার বারবার চিন্তা হয়					
২৫. আমার খুব খারাপ কিছু ঘটবে বলে আশংকা হয়					
২৬. আমি প্রায়ই দুঃশ্চিন্তা গ্রস্থ থাকি					
২৭. আমি প্রায়ই চমকে উঠি					
২৮. আমি বিচলিত ও সন্ত্রস্তবোধ করি					
২৯. আমার আত্মনিয়ন্ত্রণ হারাবার ভয় হয়					
৩০. আমি এত নার্ভাস বা উত্তেজিত বোধ করি যে মনে হয় আমার সবকিছু এলামেলো হয়ে যাচ্ছে					
৩১. আমি ধৈর্য ধরতে পারি না					

বিবৃতি সমূহ	একেবারেই হয় না (০)	খুব সামান্য হয় (১)	মোটামুটি হয় (২)	বেশি হয় (৩)	অনেক বেশি হয় (৪)
৩২. আমি সিদ্ধান্তহীনতায় ভুগি					
৩৩. আমার আত্মবিশ্বাসের অভাববোধ হয়					
৩৪. একটা বিষয়ের প্রতি মনোযোগ দিয়ে রাখা আমার জন্য বেশ কষ্টকর					
৩৫. আমার মনে হয় আমি এখনই মারা যাচ্ছি					
৩৬. আমার মৃত্যু ভয় হয়					

Appendix C

বিষন্নতা বা Depression পরিমাপনের মানক

সম্মানিত পাঠক শুভেচ্ছা নিবেন। নিম্নে কিছু বিবৃতি রয়েছে। প্রতিটি বিবৃতির পাশেই সম্ভাব্য পাঁচ ধরনের উত্তর দেয়া আছে। বিবৃতি পড়ে গত এক সপ্তাহের মধ্যে এই বিবৃতি গুলো আপনার ক্ষেত্রে কতটা প্রযোজ্য তা বিবৃতির পার্শ্বের সম্ভাব্য পাঁচটি উত্তরের যেটির জন্য সেটির ঘরে টিক (✓) চিহ্ন দিয়ে নির্দেশ করুন। আপনাকে সম্ভাব্য এই পাঁচটি উত্তর থেকে যে কোন একটি বেছে নিতে হবে। সবগুলো প্রশ্নের উত্তর দিতে হবে। অনুগ্রহ করে লক্ষ্য করুন সবগুলো বিবৃতির উত্তর দিয়েছেন কি না।

বিবৃতি সমূহ	একেবারেই প্রযোজ্য নয়	প্রযোজ্য নয়	মাঝামাঝি	কিছুটা প্রযোজ্য	পুরোপুরি প্রযোজ্য
১. আমার অশান্তি লাগে।					
২. ইদানিং আমি মনমরা থাকি।					
৩. আমার ভবিষ্যত অন্ধকার।					
৪. ভবিষ্যতে আমার অবস্থা দিন দিন আরো খারাপ হবে।					
৫. আমার সব শেষ হয়ে গেছে।					
৬. আমি মনে করি যে, জীবনটা বর্তমানে খুব বেশি কষ্টকর।					
৭. বর্তমানে আমি অনুভব করি যে, মানুষ হিসেবে আমি সম্পূর্ণ ব্যর্থ।					
৮. আমি কোথাও আনন্দ-ফুর্তি পাই না।					

বিবৃতি সমূহ	একেবারেই প্রযোজ্য নয়	প্রযোজ্য নয়	মাঝামাঝি	কিছুটা প্রযোজ্য	পুরোপুরি প্রযোজ্য
৯. নিজেকে খুব ছোট মনে হয়।					
১০. সবকিছুতে আমার আত্মবিশ্বাস কমে গেছে।					
১১. আমার মনে হয় মানুষ আমায় করুনা করে।					
১২. জীবনটা অর্থহীন।					
১৩. প্রায়ই আমার কান্না পায়।					
১৪. আমি প্রায়ই বিরক্ত বোধ করি।					
১৫. আমি কোন কিছুতে আগ্রহ পাই না।					
১৬. আমি ইদানিং চিন্তা করতে ও সিদ্ধান্ত নিতে পারি না।					
১৭. আমি আজকাল অনেক কিছুতেই মনোযোগ দিতে পারি না।					
১৮. আমি আগের মতো মনে রাখতে পারি না।					
১৯. আমি দূর্বল বোধ করি এবং অল্পতেই ক্লান্ত হয়ে পড়ি।					
২০. আমি এখন কম ঘুমাই।					
২১. আমি এখন বেশি ঘুমাই।					
২২. আমার মেজাজ খিঁটখিঁটে হয়ে গেছে।					
২৩. আমার ক্ষুধা কমে গেছে।					

বিবৃতি সমূহ	একেবারেই প্রযোজ্য নয়	প্রযোজ্য নয়	মাঝামাঝি	কিছুটা প্রযোজ্য	পুরোপুরি প্রযোজ্য
২৪. আমার ক্ষুধা বেড়ে গেছে।					
২৫. আমার ওজন কমে গেছে (ইচ্ছাকৃত ভাবে ওজন নিয়ন্ত্রণের চেষ্টা করার ফলে নয়)।					
২৬. আমার মনে হয় যে, আমার কাজকর্মের গতি কমে গেছে।					
২৭. হাসির কোন ঘটনা ঘটলেও আমি আর হাসতে পারি না।					
২৮. যৌন বিষয়ে আমার আগ্রহ কমে গেছে।					
২৯. সামাজিক কাজকর্মে আগের মতো অংশগ্রহণ করতে পারি না।					
৩০. শিক্ষা বা পেশাগত কাজকর্ম আগের মতো করতে পারি না।					

আপনার মূল্যবান মতামত দিয়ে আমাকে সাহায্য করার জন্য ধন্যবাদ।

Appendix D

চাপ বা Stress পরিমাপনের মানক

নির্দেশনা

নিম্নে জীবনের চাপমূলক অবস্থা সংক্রান্ত ১০টি প্রশ্ন রয়েছে। প্রতিটি প্রশ্নের জন্য পাঁচটি করে উত্তর রয়েছে। প্রতিটি প্রশ্নে যে উত্তরটি গত এক মাসে আপনার জীবনের চাপমূলক অবস্থাকে সবচেয়ে ভাল বর্ণনা করে তার পাশে টিক (✓) চিহ্ন দিন।

প্রশ্নসমূহ	কখনই না	প্রায়ই না	কখনও কখনও	প্রায়ই	সবসময়
১. অপ্রত্যাশিতভাবে কোন কিছু ঘটার জন্য আপনি কতবার বিচলিত হয়েছেন?					
২. কতবার আপনার মনে হয়েছে যে, জীবনের গুরুত্বপূর্ণ বিষয়গুলোর উপর আপনি নিয়ন্ত্রণ রাখতে পারছেন না?					
৩. আপনি কতবার বিচলিত ও চাপবোধ অনুভব করেছেন?					
৪. ব্যক্তিগত সমস্যা মোকাবেলা করার ক্ষমতা সম্পর্কে আপনার কতবার নিজেকে আত্মবিশ্বাসী মনে হয়েছে?					
৫. কতবার আপনার মনে হয়েছে যে, যেভাবে চেয়েছেন সেভাবে সবকিছু আপনার ইচ্ছামত ঘটছে?					
৬. আপনি কতবার আপনার জীবনের বিরক্তিবোধ নিয়ন্ত্রণ করতে সক্ষম হয়েছেন?					
৭. আপনার জীবনে যেসব কাজ গুরুত্বপূর্ণ ছিল সেগুলো আপনি সঠিকভাবে করতে পেরেছেন কিনা?					

প্রশ্নসমূহ	কখনই না	প্রায়ই না	কখনও কখনও	প্রায়ই	সবসময়
৮. কতবার আপনার মনে হয়েছে যে, সবকিছুতে আপনার নিয়ন্ত্রণ রয়েছে?					
৯. কোন কিছু আপনার নিয়ন্ত্রণের বাইরে যাওয়ার কারণে কতবার আপনি রাগান্বিত হয়েছেন?					
১০. কতবার আপনার মনে হয়েছে, এতবেশী সমস্যা জমেছে যে, আপনি তা অতিক্রম করতে পারছেন না?					

PUBLICATIONS

LIST OF PUBLICATIONS

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MENTAL HEALTH OF THE PARENTS OF AUTISTIC CHILDREN IN RELATION TO THEIR EDUCATION AND EMPLOYMENT STATUS

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Abstract: The current study was intended to inspect the mental health of parents of children with autism in relation to their level of education and employment status. A total of 284 parents were selected purposively from different districts of Rajshahi division in Bangladesh. Anxiety of the respondents was measured by administering Anxiety Measuring Questionnaire (Deeba and Begum 2002) and depression of the respondents was measured by applying Depression Measuring Questionnaire (Uddin and Rahman 2005). Adapted Bangla version of Life Stress Measuring Questionnaire (Fahim 2001) originally developed by Cohen, 1999 was used to measure the life stress of the same participants. Results of the study indicate that parents differed significantly in anxiety ($F = 18.434$, $p < 0.001$), depression ($F = 30.919$, $p < 0.001$), and stress ($F = 28.664$, $p < 0.001$) scores in terms of their level of education. Parents also varied in anxiety ($t = 2.755$, $p < 0.01$), depression ($t = 4.209$, $p < 0.001$) and stress ($t = 4.606$, $p < 0.001$) scores in terms of their employment status. Unemployed parents suffered from more anxiety, depression and stress due to their beloved children's health condition as compared to employed parents.

Key words: Mental health, autism, level of education, employment status.

সারাংশ : শিক্ষার স্তর এবং চাকুরীর অবস্থা ভেদে অটিজম-এ আক্রান্ত শিশুদের পিতা-মাতার মানসিক স্বাস্থ্য পরীক্ষা করার অভিপ্রায়ে বর্তমান গবেষণাটি পরিচালিত হয়। বাংলাদেশের রাজশাহী বিভাগের বিভিন্ন জেলা থেকে উদ্দেশ্যমূলক নমুনায়ন পদ্ধতির সাহায্যে সর্বমোট ২৮৪ জন পিতা-মাতাকে নমুনা হিসেবে নির্বাচন করা হয়। উত্তরদাতাদের উদ্বেগ পরিমাপের জন্য উদ্বেগ পরিমাপক প্রশ্নমালা (দীবা এবং বেগম, ২০০২) এবং বিষন্নতা পরিমাপের জন্য বিষন্নতা পরিমাপক প্রশ্নমালা (উদ্দীন এবং রহমান, ২০০৫) ব্যবহার করা হয়। একই অংশগ্রহণকারীদের জীবনের চাপ পরিমাপের জন্য চাপ পরিমাপক প্রশ্নমালার অভিযোজিত বাংলা সংস্করণ (ফাহিম, ২০০১) ব্যবহার করা হয় যার মূল প্রশ্নমালাটি কোহেন, ১৯৯৯ সালে তৈরী করেন। গবেষণার ফলাফলে দেখা যায় শিক্ষার স্তরের ভিত্তিতে ঐ সকল পিতা-মাতার উদ্বেগ ($F = ১৮.৪৩৪$, $p < ০.০০১$), বিষণ্নতা ($F = ৩০.৯১৯$, $p < ০.০০১$) এবং চাপের ($F = ২৮.৬৬৪$, $p < ০.০০১$) স্কোরের মধ্যে তাৎপর্যপূর্ণ পার্থক্য বিদ্যমান। চাকুরীর অবস্থাভেদেও ঐ সকল পিতা-মাতার উদ্বেগ ($t = ২.৭৫৫$, $p < ০.০১$),বিষণ্নতা ($t = ৪.২০৯$, $p < ০.০০১$) এবং চাপের ($t = ৪.৬০৬$, $p < ০.০০১$) স্কোরের পার্থক্য দেখা যায়। বেকার পিতা-মাতারা তাদের অতি প্রিয় সন্তানদের স্বাস্থ্যের অবস্থার কথা ভেবে চাকুরীজীবী পিতা-মাতাদের চেয়ে অধিক উদ্বেগ, বিষণ্নতা এবং চাপে ভোগে।

Introduction

Children are the precious endowment for parents. Parents wish to ensure their children's safety and protect them from all types of threat and danger. It is devastating for parents when they learn that their child is suffering from lifetime disability like autism. It is a disorder of neural development characterized by impaired social interaction and communication, and by restricted and repetitive behavior. These signs all begin before a child is three years old. Autism affects information processing in the brain by altering how nerve cells and their synapses connect and organize; how this occurs is not well understood. Autism has an adverse effect on not only the child but the family as well. The behaviors of a child with autism may appear peculiar, frightening, and undesirable in social situations (Dzubay 2011). A growing number of researches reveal that children with autism and their families especially their parents face numerous and invasive challenges (Omar *et al.* 2017).

Parenting of a child with a developmental disability is a tough and fatiguing task for parents (Vidyasagar and Koshy 2010). It expands parental hassle and stress (Montes and Halterman 2008). As primary caregivers parents have to take the responsibilities of their child's health, behaviors, communication, etc. and they required to assist their child in everyday life (Chaabene *et al.* 2018). Difficulties to access a quality care, financial burden, issues of adulthood, and their child's challenging behaviors may produce significant stressors to parents (Omar *et al.* 2017).

Parents may have to deal with different physical, mental, financial, societal and management-related stressors followed by nuptial stressors (Omar *et al.* 2017). They may experience feelings of sadness, worry, and anger due to haziness about their child's future and fear of the possibility of hindrance and demise (Carey *et al.* 2002). They may feel socially isolated, upset, and stigmatized as they avoid social gatherings and recreational activities because of the child's condition and fear of being ashamed or embarrassed (Rosenthal *et al.* 2001).

Maintaining better mental health is crucial for living an enthusiastic life (Ferdous *et al.* 2018). Mental health may include an individual's ability to enjoy life, and create a balance between life activities and efforts to achieve psychological resilience. Mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully and is able

to make a contribution to his or her community (WHO 2004). Parents having children with autism may fall psychologically at a greater risk due to their beloved child's condition. In addition, different factors of their own like sex, age, level of education, employment status, family income, social support etc. may also play a crucial role to their mental state. Prior researches suggest that there is a strong and positive relationship between individual's level of education and mental health (Cutler and Lleras-Muney 2012). Higher levels of education can ensure better mental health as education is considered to enhance people's knowledge, reasoning, effectiveness, problem solving skills and empower better coping mechanisms (Halpern-Manners *et al.* 2016) and open access to different necessary resources through enhancing employment prospect (Mirowsky and Ross 2008).

Araya *et al.* (2003) reported that less education is significantly associated with an increased prevalence of common mental disorders. Less educated adults report worse general health (Mirowsky and Ross 2008), more chronic conditions (Quinones *et al.* 2016), and more functional limitations and disability (Zajacova and Montez 2017). Much of the education-health research over the past two decades has been grounded in the Fundamental Cause Theory (Chang and Lauderdale 2009) which considers education as the fundamental causes of health and disease as education determines access to a massive amount of material and non-material resources such as income, secure environs, and healthier lifestyles, all of which enhance psychological wellbeing. The Human Capital Theory (HCT) conceptualizes education as an investment that yields returns via increased productivity (Tan 2014).

The care of children with ASD demands expensive costs on families (Meadan *et al.* 2010). Parents' employment status provides them the opportunity to bear the cost related to child care and other necessary everyday expenditure. Results of several studies indicate the negative effects of unemployment on psychological well-being (McKee-Ryan *et al.* 2005; Paul and Moser 2009; Fergusson *et al.* 2014; Pelzer *et al.* 2014). A higher risk for common mental disorders like major depression, anxiety disorders, alcohol abuse/dependence, etc. has been reported in unemployed individuals (Fryers *et al.* 2003).

Rationale of the Study

Physical and psychological sound health is necessary for all individuals. It becomes a demand for parents having children with autism to remain mentally robust as they are the principal and in most cases the only one care giving persons for the special need child. They confront with multiple physical, psychological, financial and social stressors, and dealing and coping with these stressors can be affected by various factors. Parents' level of education and employment status are such two factors that can influence their mental health condition both positively and negatively. Review of literature suggests that higher education level is positively linked to better mental health (Cutler and Lleras-Muney 2012; Mirowsky and Ross 2008; Quinones *et al.* 2016; Zajacova and Montez 2017). In addition, employment status has a positive influence on mental wellbeing (McKee-Ryan *et al.* 2005; Paul and Moser 2009; Fergusson *et al.* 2014; Pelzer *et al.* 2014). While there is plentiful literature on mental health of the parents having children with autism in relation to different parental and family factors in the worldwide, such deeds are apparently infrequent in Bangladesh. To fill this gap in the literature, the present study aims to focus on the mental health of the parents who are undergoing of distress and sufferings in dealing with their children with autism in relation to parents' level of education and employment status. The findings of the present study will be able to shed some light for the parents, caregivers, and family members, as well as the mental health practitioners to understand how one's education level and employment status can influence the psychological wellbeing of parents of children with special needs. This understanding will help them to take required actions regarding mental health issues of both parents and children with autism. In addition, it will add new knowledge to the existing literature.

Objectives of the Study

The main objective of the current study was to examine the mental health of parents having children with autism in relation to parents' level of education and employment status.

Specific objectives of the study were to investigate-

i) whether parents having children with autism differ in anxiety, depression and stress score in terms of their level of education;

ii) whether parents having children with autism differ in anxiety depression and stress score in terms of their employment status;

Materials and Methods

Participants

A total of 284 parents of children with autism spectrum disorder (ASD) were selected purposively from different districts of Rajshahi division in Bangladesh. Among them 141 were mothers and 143 were fathers and their age ranging from 26 to 55 years. Information regarding parents' level of education and employment status is presented in Table 1.

Table 1 Parents 'Level of Education and Employment Status

Variables		Father	Mother
Level of Education	Undergraduate	37	49
	Graduate	61	57
	Postgraduate	45	35
Employment Status	Employed	63	64
	Unemployed	80	77

Design of the Study

The present study was designed to investigate the mental health of parents of autistic children in relation to their level of education and employment status. This study will be conducted following by cross sectional survey design. In this study the independent variables were level of education and employment status. Mental health was regarded as dependent variable. There were two levels of employment status (Employed and Unemployed) and three levels of education (Under graduate, Graduate and Post graduate). Bengali versions of anxiety and depression scale were administered on the respondents to measure their level of anxiety and depression. Adapted Bengali version of Life Stress Measuring Questionnaire was administered on the same respondents to measure their stress of life. Overall these anxiety, depression and stress level will reflect the mental health of the respondents.

Measuring Instruments

Following instruments were used to carry out the present study-

1. Bangla version of the Anxiety Measuring Questionnaire
2. Bangla version of the Depression Measuring Questionnaire
3. Bangla version of the Life Stress Measuring Questionnaire

In addition, a personal information form was used to collect the demographic information like parent's age, sex, level of education, employment status etc.

Description of the instruments

1. Anxiety Measuring Questionnaire: The anxiety scale (Deeba and Begum 2002) was developed in the cultural context of Bangladesh for measuring level of anxiety of Bangladeshi population. The initial scale consists of 39 items in 5 points Likert format. Item analysis of these items was done using 102 clinical and non-clinical participants. 36 items were selected for the final scale. For each single question there were five categories responding level, there sequences were: never occurs = 0, mildly occurs = 1, moderately occurs = 2, severely occurs = 3, and profoundly occurs = 4. Participants were requested to respond any of five categories by giving tick mark. The sum of the item scores was the total score of the individual. Generally, score ranges are 54 and below = mild, 55 to 66 = moderate, 67 to 77 = severe, 78 to 135 and above = profound and cut off point = 47.5. A high score indicates higher anxiety and low score indicates low anxiety.

On the basis of item total correlation and discrimination value both significant at .01.Reliability of the anxiety scale, the split-half reliability was found 0.916 (α = 0.01) and the co-efficient Alpha for 36 items was 0.9468 (α =0.01). The test re-test reliability or the co-efficient of stability r=0.688 (α =0.01) was found. The content validity of anxiety scale was censured by strictly following the sequential system model of scale development and by expert's input in different stages of item construction. Three external criteria were found to be positively correlated with the anxiety score (Psychiatrists' rating, r =0.628; $p < 0.01$). Construct validity of anxiety scale was assessed by discriminately of the scale among clinical and non-clinical samples (F = 60.275 at α =0.01), and item total correlation (which range from r =0.399 to r = 0.748, $p < 0.01$). Both severity and screening norms were developed for the anxiety scale.

2. Depression Measuring Questionnaire: The depression scale (Uddin and Rahman 2005) was developed in the cultural context of Bangladesh for measuring level of depression of Bangladeshi population. The scale was 5 point Likert-type scale consisting of 30 items. The response option are "not at all applicable = 1", "not applicable = 2", "uncertain = 3", "a bit applicable = 4", and "totally applicable = 5". All items were score in positive direction. Total score of any individual was obtained from sum total of scores of all 30 items. Generally score ranges are 30–100 = minimal, 101–114 = mild, 115–123 = moderate, 124–150 = severe and scores more than 94 is considered as depressed. A high score indicates higher

depression. The adapted translating reliability is 0.67. The test re-test reliability was found to be 0.599 ($p < 0.01$) and split half reliability was .7608. The validity scale was estimated by using concurrent and construct validity. The scale was found to be positively correlated with the psychiatrists' rating of depression ($r = 0.377$, $p < 0.01$), patients' self-rating of depression ($r = 0.588$, $p < 0.01$) and HADS (Hospital Anxiety and Depression Scale; Chowdhury 2000). Similarly current depression scale discriminated between depressed and non-depressed subjects ($F = 85.356$, $p < 0.000$).

3. Life Stress Measuring Questionnaire. The original version of the "How stressful is your life?" (Cohen 1999) as translated and adapted into Bangla by (Fahim 2001) was used to measure life stress. There are 10 items in the life stress scale. The scale was 5 point Likert-type scale. For the items 1, 2, 3, 7, 9 and 10 weights have been given as never = 0, rarely = 1, sometimes = 2, often = 3 and constant = 4. On the other hand for 4, 5, 6 and 8 items weights are never = 4, rarely = 3, sometimes = 2, often = 1 and constant = 0. Generally score ranges are 10 to 19 = mild, 20 to 29 = moderate and 30 to 40 = severe. The correlation co-efficient of the Bengali version of the Life Stress Questionnaire with English was found to be 0.90, which was significant at 0.01 level. The test re-test reliability over a period of 2 weeks was 0.94, which was significant at 0.01 level. This means that the reliability of the scale was satisfactory.

Procedure

The data were collected through the questionnaires mentioned above from the parents who had children with ASD and who were spontaneous and showed positive attitudes towards the research. For taking consent, at the beginning, each of the parents was briefed about the general purpose of the study. They were also guaranteed that all information given by them would be kept confidential and would be used only for research purpose. Both written and verbal instructions were provided to them for clarification about what to do, and how to fill up all questionnaires. After completion, all of them were thanked for their participation and cooperation.

Results

In the present study, obtained data were analyzed by employing ANOVA in order to inspect the variation in anxiety, depression and stress scores among the parents having children with ASD in terms of parents' level of education (Table 2 and Table 3), and independent sample *t*-test in order to scrutinize whether parents' mental health condition varies according to parents' employment status (Table 4). The findings are presented in the following tables.

Table 2 Analysis of Variance on Anxiety, Depression and Stress Scores for the Parents having Children with Autism according to Parents' Level of Education

Variables	Educational Qualification	*SS*	*df*	*MS*	*F*
Anxiety	Between Groups	10957.25	2	5478.623	18.434***
	Within Groups	83512.933	281	297.199	
	Total	94470.180	283		
Depression	Between Groups	9171.384	2	4585.692	30.919***
	Within Groups	41675.911	281	148.313	
	Total	50847.296	283		
Stress	Between Groups	1923.599	2	961.799	28.664***
	Within Groups	9428.894	281	33.555	
	Total	11352.493	283		

*** $p < 0.001$

Table 2 reveals that parents having children with ASD varied in terms of their level of education for anxiety ($F = 18.434$, $p < 0.001$), depression ($F = 30.919$, $p < 0.001$), and stress ($F = 28.664$, $p < 0.001$).Under graduate parents were more anxious, depressed and stressed regarding their children's physical and psychological state.

Post-hoc pair wise comparisons were carried out to see whether difference between the means of all possible pairs were significant or not in case of parental level of education. The results obtained by using Tukey's method are presented in Table 3.

Table 3 Post-hoc Tukey test on Anxiety, Depression and Stress Scores for the Parents having Children with Autism according to Parents' Level of Education

	(I) Education Level	(J) Education Level	Mean Difference	Std. Error
Anxiety	Post-graduate	Graduate	-7.825*	2.497
		Under graduate	-16.242*	2.678
	Graduate	Post-graduate	7.825*	2.497
		Under graduate	-8.416*	2.444
	Under graduate	Post graduate	16.242*	2.678
		Graduate	8.416*	2.444
Depression	Post-graduate	Graduate	-9.499*	1.764
		Under graduate	-14.673*	1.892
	Graduate	Post-graduate	9.499*	1.764
		Under graduate	-5.174*	1.727
	Under graduate	Post graduate	14.673*	1.892
		Graduate	5.174*	1.727
Stress	Post-graduate	Graduate	-4.286*	.839
		Under graduate	-6.735*	.900
	Graduate	Post-graduate	4.286*	.839
		Under graduate	-2.448*	.821
	Under graduate	Post graduate	6.735*	.900
		Graduate	2.448*	.821

* $p < 0.05$

Table 3 indicates that mean differences were significant for all levels of education like as post graduate and graduate, post graduate and under graduate, and graduate and under graduate in respect of anxiety, depression and stress. Table 3 also indicates that in case of anxiety, depression, and stress post-graduate parents have expressed higher mental health than graduate and undergraduate parents. Results also revealed that in case of anxiety, depression, and stress graduate parents have expressed higher mental health than undergraduate parents. So, it can be said that undergraduate parents have higher mental health problems.

Table 4 Mean, SD and t-value on Anxiety, Depression and Stress for the Parents having Children with Autism according to Parents' Employment Status

Variables	Attributes	*N*	*M*	*SD*	*df*	*t*
Anxiety	Employed	127	71.09	16.76	282	2.755**
	Unemployed	157	77.03	19.05		
Depression	Employed	127	115.96	12.78	282	4.209***
	Unemployed	157	122.50	13.22		
Stress	Employed	127	24.60	6.15	282	4.606***
	Unemployed	157	27.96	6.10		

*** $p < 0.001$, ** $p < 0.01$

Findings of Table 4 indicate that parents differed significantly in anxiety ($t = 2.755$, $p < 0.01$), depression ($t = 4.209$, $p < 0.001$) and stress ($t = 4.606$, $p < 0.001$) scores in terms of their employment status. Unemployed parents suffer from more anxiety, depression and stress due to their beloved children's health condition as compared to employed parents.

Discussion

The present study was intended to examine the mental health of parents of children with autism in relation to parents' level of education and employment status. A total of 284 parents were selected purposively from different districts of Rajshahi division in Bangladesh. Anxiety of the respondents was measured by administering Anxiety Measuring Questionnaire (Deeba and Begum 2002) and depression of the respondents was measured by applying Depression Measuring Questionnaire (Uddin and Rahman 2005). Adapted Bengali version of Life Stress Measuring Questionnaire (Fahim 2001) originally developed by Cohen (1999) was used to measure the life stress of the same participants. Results of the study indicate that parents differed significantly in anxiety ($F = 18.434$, $p < 0.001$), depression ($F = 30.919$, $p < 0.001$), and stress ($F = 28.664$, $p < 0.001$) scores in terms of their level of education. Under graduate parents were more anxious, depressed and stressed regarding their children's

physical and psychological state. This finding is supported by the previous findings also (Cutler and Lleras-Muney 2012; Mirowsky and Ross 2008; Quinones *et al.* 2016; Zajacova & Montez 2017). Higher levels of education can ensure better mental health as education can enhance people's knowledge, awareness, understanding, problem solving skills and empower better coping mechanisms. Education helps one to get better and secure jobs and allow families to accumulate capital that can be used to improve health (Mirowsky and Ross 2008). Parents may have lack of awareness about availability of services for their children with autism due to their lack of knowledge or low level of education. They may also worry about management including concern about the medical treatment of their children, the expected course of illness, prognosis and eventual quality of life due to the lack of proper education.

Results of the present study also indicate that parents varied in anxiety ($t = 2.755$, $p < 0.01$), depression ($t = 4.209$, $p < 0.001$) and stress ($t = 4.606$, $p < 0.001$) scores in terms of their employment status. Unemployed parents suffered from more anxiety, depression and stress due to their beloved children's health condition. The result is also supported by the previous findings (McKee-Ryan *et al.* 2005; Paul and Moser, 2009; Fergusson *et al.* 2014; Pelzer *et al.* 2014). The care of children with autism needs a high cost regarding regular follow-up and medication. Lawoko and Soares (2002) found that parents of children with chronic diseases had greater financial problems as those parents have more everyday expenditure than parents of healthy children. Financial stressors also increase significantly with insufficient income as one parent may need to stay at home to care for the child (Farsi *et al.* 2016). Thus, the general financial instability among families of child with autism together with the additional financial problems to which parents are subjected may explain the higher levels of distress among parents.

Conclusion

In conclusion we may said that having a child with autism adversely affects the parent's life. The nature of the disability has an impact on the psychological wellbeing of the parents. The majority of the parents having children with autism in Bangladesh are suffering from anxiety, depression and stress. Parents' level of education and employment status play crucial role for maintaining better mental health and it determines one's perceived position in a social hierarchy. Counseling, psychotherapy and training can help parents to overcome the stress, anxiety and sadness and learn healthy coping strategies. Future studies should address evidence-supported mental health interventions for enhancing the psychological well-being of the children affected by ASD and their parents and families. The findings of the present study can be a beneficial resource for the parents, caregivers, and family members, as well as the mental health practitioners to understand how one's level of education and employment status can influence the psychological wellbeing of parents of children with special needs. This understanding will help them to take required actions to deal with mental health issues effectively.

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MENTAL HEALTH CONDITIONS OF PARENTS OF AUTISTIC CHILDREN

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Abstract: The purpose of the present study was to examine the mental health of parents having children with autism spectrum disorder (ASD) in relation to their gender, age and family income. A total of 284 parents of children with autism spectrum disorder (ASD) were selected purposively from different districts of Rajshahi division in Bangladesh for the study. Anxiety of the respondents was measured by administering Anxiety Measuring Questionnaire (Deeba and Begum 2002) and depression of the respondents was measured by applying Depression Measuring Questionnaire (Uddin and Rahman 2005). Adapted Bangla version of Life Stress Measuring Questionnaire (Fahim 2001) originally developed by Cohen, 1999 was used to measure the life stress of the same participants. The study indicates that in Bangladesh parents of ASD have adverse mental states that evident as anxiety, depression and stress and the findings are consistent with previous studies from different populations. Results of this study denote that parents differed significantly in anxiety (t = 9.19, p < 0.001), depression (t = 9.16, p < 0.001), and stress (t = 8.01, p < 0.001) scores in terms of their gender. Especially, mothers of children diagnosed with autism had significantly lower mental health and experience more anxiety, depression and stress as compared to children's father. Parents also varied in terms of their age for anxiety (F = 15.875, p < .001), depression (F = 20.025, p < 0.001), and stress (F = 19.195, p < 0.001). Parents, age ranging from 26 to 35 years, were more anxious, depressed and stressed due to their children's condition. Also, anxiety (F =18.019 p < 0.001), depression (F = 29.931, p < 0.001), and stress (F = 47.929, p < 0.001) scores varied significantly according to family income discrepancy for parents who have autistic children. Parents from low income families were more anxious, depressed and stressed for their children with ASD. The findings of this present study can be enormously helpful for the mental health professionals to take required actions for enhancing the psychological states of the parents having children with ASD.

Key words: Mental health, autism spectrum disorder, gender, age, family income.

সারাংশ : বর্তমান গবেষণার উদ্দেশ্য ছিল লিঙ্গ, বয়স এবং পারিবারিক আয়ের ভিত্তিতে অটিজম স্পেকট্রাম ডিজঅর্ডার-এ আক্রান্ত শিশুদের পিতা-মাতার মানসিক স্বাস্থ্য অনুসন্ধান করা। বাংলাদেশের রাজশাহী বিভাগের বিভিন্ন জেলা থেকে উদ্দেশ্যমূলক নমুনায়ন পদ্ধতির সাহায্যে সর্বমোট ২৮৪ জন পিতা-মাতাকে নমুনা হিসেবে নির্বাচন করা হয়। উত্তরদাতাদের উদ্বেগ পরিমাপের জন্য উদ্বেগ পরিমাপক প্রশ্নমালা (দীবা এবং বেগম, ২০০২) এবং বিষন্নতা পরিমাপের জন্য বিষন্নতা পরিমাপক প্রশ্নমালা (উদ্দীন এবং রহমান, ২০০৫) ব্যবহার করা হয়। একই অংশগ্রহণকারীদের জীবনের চাপ পরিমাপের জন্য চাপ পরিমাপক প্রশ্নমালার অভিযোজিত বাংলা সংস্করণ (ফাহিম, ২০০১) ব্যবহার করা হয় যার মূল প্রশ্নমালাটি কোহেন, ১৯৯৯ সালে তৈরী করেন। গবেষণায় দেখা যায় বাংলাদেশে অটিজম স্পেকট্রাম ডিজঅর্ডার-এ আক্রান্ত শিশুদের পিতা-মাতার মানসিক স্বাস্থ্য খারাপ থাকে যার ফলশ্রুতিতে তারা উদ্বেগ, বিষন্নতা এবং চাপে ভোগে এবং এই ফলাফল অন্যান্য জনসংখ্যার উপর পরিচালিত গবেষণার সাথে সামঞ্জস্যপূর্ণ। বর্তমান গবেষণার ফলাফলে দেখা যায় যে, লিঙ্গগত পার্থক্যের কারণে ঐ সকল পিতা-মাতার উদ্বেগ (t = ৯.১৯, p < ০.০০১), বিষন্নতা (t = ৯.১৬, p < ০.০০১) এবং চাপের (t = ৮.০১, p < ০.০০১) স্কোর-এর মধ্যে তাৎপর্যপূর্ণ পার্থক্য বিদ্যমান। বিশেষভাবে অটিজমে আক্রান্ত শিশুদের পিতাদের তুলনায় মাতাদের মানসিক স্বাস্থ্য অধিক খারাপ হয় এবং তাঁরা পিতাদের তুলনায় অধিক উদ্বেগ, বিষন্নতা এবং চাপে ভোগে। বয়সগত পার্থক্যের কারণেও ঐ সকল পিতা-মাতার উদ্বেগ (F = ১৫.৮৭৫, p < ০.০০১), বিষন্নতা (F = ২০.০২৫, p < ০.০০১) এবং চাপের (F = ১৯.১৯৫, p < ০.০০১) পার্থক্য দেখা যায়। ২৬-৩৫ বছর বয়সের পিতা-মাতারা তাদের সন্তানদের এই অবস্থার কারণে অধিক উদ্বেগ, বিষন্নতা এবং চাপে ভোগে। এছাড়াও অটিজমে আক্রান্ত শিশুর পিতা-মাতাদের পারিবারিক আয়ের তারতম্যের কারণেও তাদের উদ্বেগ (F = ১৮.০১৯, p < ০.০০১), বিষন্নতা (F = ২৯.৯৩১, p < ০.০০১) এবং চাপের (F = ৪৭.৯২৯, p < ০.০০১) স্কোর এর মধ্যে তাৎপর্যপূর্ণ পার্থক্য দেখা যায়। নিম্ন আয়সম্পন্ন পরিবারের পিতা-মাতারা তাদের সন্তানদের অটিজম স্পেকট্রাম ডিজঅর্ডার-এ আক্রান্ত হওয়ার কারণে অধিক উদ্বেগ, বিষন্নতা এবং চাপে ভোগে। বর্তমান গবেষণার ফলাফল মানসিক স্বাস্থ্যকর্মীদের অটিজম স্পেকট্রাম ডিজঅর্ডার-এ আক্রান্ত শিশুদের পিতা-মাতার মানসিক অবস্থার উন্নতিতে প্রয়োজনীয় পদক্ষেপ গ্রহণে বিশেষভাবে সহায়তা করবে।

Introduction

Autism spectrum disorder (ASD) is a neuro-developmental disorder characterized by impediment and deficits in the development of social, language, communicative and other skills, various motor mannerisms, resistance to change, and idiosyncratic interests and stereotypical behaviors (APA 2013). Children with ASD had short attention span or low concentration, hardly sit still and some of them may have behavioral and emotional problems (Wongkittirungrueang 2016). The pretense of ASD symptoms may range from mild to severe and fluctuate from person to person. Approximately, 1 in 160 children worldwide (or 62.5 per 10,000) are identified with ASD (WHO 2018).

A growing number of researches reveal that the presence of a child with special needs, such as ASD, triggers psychological distress among the family members (Bader and Barry 2014; Mitchell and Holdt 2014), especially, in the parents (Gray 2003). Diagnosing a child with ASD causes a change in the way society deals with that child through adding a situational predicament beyond parents' control. As soon as parents learn about their child's exceptionality they are inexorably shocked and devastatingly stunned (Gregory 1991). Many parents may feel the craving to conceal the diagnosis, or even the child with disability, from the world in order to avoid societal criticism and mock.

Parents often go through a process of grieving with emotions that may range from confusion, guilt, shock, frustration, anger, denial, stress, anxiety, shame, resentment, inadequacy, depression (Brobst *et al.* 2009; Hoffman *et al.* 2009) to the question "*Why me*?" (Nouri 2009). It is reported that rather than preexisting psychological sufferings, the trouble of caring for the

child with ASD has direct impact on the expansion of psychological disorders among parents (Fairthome *et al.* 2015). Psychological suffering is higher among the parents having children with ASD as compared to parents of children of typical development parents of children diagnosed with other disabilities (Abbeduto *et al.* 2004; Pisula 2007; Yirmiya and Shaked 2015), or when compared to the general population.

Parental reactions of having a child with autism are all normal responses, unless they are extreme or prolonged. The condition of the special children and unmet parents' mental health needs pose a significant risk to the physical, psychological, and social well-being of the parents (Catalano *et al.* 2018). In addition, there are some parental factors like sex, age etc. and family factors like family income those may pose a greater risk to the mental health of parents having children with ASD. Sharpley *et al.* (1997) stated that mothers experience more stress than fathers. They feel guilt; blame themselves for their children's disorder (Tarabek 2011). In addition, in a study carried out in Oman appears to endorse both parents as affected even when the child's age, child's sex, parents' age, parents' education, family monthly income, and parents' job are taken into consideration (Fairthorne *et al.* 2015).

Rationale of the study

Every child is precious to his or her parents. No matter how a child is, parents love and care them from the core of heart. Protecting children's mental health is a natural part of parental commitment. To take care the children as well as the other family members properly, parents need to remain physically and mentally fit. Above all, when parents have any child with ASD, it becomes a demand to be mentally healthy as most of the cases no one is found as alternate caregivers for the children. The day-to-day care of the children with autism may become stressful for parents that may adversely affect the mental state of both fathers and mothers. Parents' mental condition influences how they feel, think, and behave each day; handle daily life stresses; the way they look themselves, their lives and others in their lives. It plays an imperative part through allowing them to adapt to changes in their lives and cope with adversity. Bangladesh Sangbad Sangstha reported that over 14 lakh children are suffering from ASD in Bangladesh (BSS, 2019). The largest part of the work being done in autism in the world wide focuses on the child and facilitates the improvement in the child only. Some researches focus on their parents and different parental and family factors. However, in Bangladesh, main emphasis has been given on the children with ASD merely, not much is done focusing on a parent's difficulties and struggles. While there is abundant literature on mental health of parents of children with autism in relation to different parental and family factors in various parts of the world, such undertakings are apparently rare in Bangladesh. To fill this gap in the literature, the present study aims to focus on the mental health of the parents who are undergoing of distress and sufferings in dealing with their children with autism spectrum disorder in relation to parents' gender, age and family income. The findings of the present study can be a helpful resource for the mental health professionals to take necessary actions regarding mental health issues of both parents and children with ASD. In addition, it will add new knowledge to the existing literature.

Objectives of the study

The main objective of the current study was to examine the mental health of parents having children with autism in relation to parents' gender, age and family income.

Specific objectives of the study were to investigate-

i) whether parents having children with autism differ in anxiety, depression and stress score in terms of parents' gender;
ii) whether parents having children with autism differ in anxiety, depression and stress score in terms of parents' age;
iii) whether parents having children with autism differ in anxiety, depression and stress score in terms of family income;

Materials and Methods

Participants

A total of 284 parents of children with autism spectrum disorder (ASD) were selected purposively from different districts of Rajshahi division in Bangladesh for the study. Among them 141 were mothers and 143 were fathers and their age ranging from 26 to 55 years.

Design of the Study

The present study was designed to investigate the mental health of parents of autistic children in relation to their gender, age and family income. This study will be conducted following by cross sectional survey design. In this study the independent variable were gender, age and family income. Mental health was regarded as dependent variable. There were two levels of gender (Father and Mother), three levels of age (26-35 years, 36-45 years and 46-55 years), and there were three levels of income (High, Medium and Low). Bengali versions of anxiety and depression scale were administered on the respondents to measure their level

of anxiety and depression. Adapted Bengali version of Life Stress Measuring Questionnaire was administered on the same respondents to measure their stress of life. Overall these anxiety, depression and stress level will reflect the mental health of the respondents.

Measuring Instruments

Following instruments were used to carry out the present study-

1. Bangla version of the Anxiety Measuring Questionnaire
2. Bangla version of the Depression Measuring Questionnaire
3. Bangla version of the Life Stress Measuring Questionnaire

In addition, a personal information form was used to collect the demographic information like parent's age, sex, family income, socioeconomic status etc.

Description of the instruments

1. Anxiety Measuring Questionnaire: The anxiety scale (Deeba and Begum 2002) was developed in the cultural context of Bangladesh for measuring level of anxiety of Bangladeshi population. The initial scale consists of 39 items in 5 points Likert format. Item analysis of these items was done using 102 clinical and non-clinical participants. 36 items were selected for the final scale. For each single question there were five categories responding level, there sequences were: never occurs = 0, mildly occurs = 1, moderately occurs = 2, severely occurs = 3, and profoundly occurs = 4. Participants were requested to respond any of five categories by giving tick mark. The sum of the item scores was the total score of the individual. Generally, score ranges are 54 and below = mild, 55 to 66 = moderate, 67 to 77 = severe, 78 to 135 and above = profound and cut off point = 47.5. A high score indicates higher anxiety and low score indicates lower anxiety.

On the basis of item total correlation and discrimination value both significant at .01 levels. Reliability of the anxiety scale, the split-half reliability was found 0.916 ($\alpha = 0.01$) and the co-efficient Alpha for 36 items was 0.9468 ($\alpha = 0.01$). The test re-test reliability or the co- efficient of stability $r = 0.688$ ($\alpha = 0.01$) was found. The content validity of anxiety scale was censured by strictly following the sequential system model of scale development and by expert's input in different stages of item construction. Three external criteria were found to be positively correlated with the anxiety score (Psychiatrists' rating, $r = 0.628$; $p<0.01$). Construct validity of anxiety scale was assessed by discriminately of the scale among clinical and non-clinical samples ($F = 60.275$ at $\alpha = 0.01$), and item total correlation (which range from $r = 0.399$ to $r = 0.748$, $p < 0.01$). Both severity and screening norms were developed for the anxiety scale.

2. Depression Measuring Questionnaire: The depression scale (Uddin and Rahman 2005) was developed in the cultural context of Bangladesh for measuring level of depression of Bangladeshi population. The scale was 5 points Likert-type scale consisting of 30 items. The response option are "not at all applicable = 1", "not applicable = 2", "uncertain = 3", "a bit applicable = 4", and "totally applicable = 5". All items were score in positive direction. Total score of any individual was obtained from sum total of scores of all 30 items. Generally score ranges are 30 - 100 = minimal, 101 – 114 = mild, 115 – 123 = moderate, 124–150 = severe and scores more than 94 is considered as depressed. A high score indicates higher depression. The adapted translating reliability is 0.67. The test re-test reliability was found to be 0.599 ($p <0.01$) and split half reliability was 0.7608. The validity of the scale was estimated by using concurrent and construct validity. The scale was found to be positively correlated with the psychiatrists' rating of depression ($r = 0.377$, $p < 0.01$), patients' self-rating of depression ($r = 0.588$, $p <0.01$) and HADS (Hospital Anxiety and Depression Scale; Chowdhury 2000). Similarly current depression scale discriminated between depressed and non-depressed subjects ($F = 85.356$, $p < 0.001$).

3. Life Stress Measuring Questionnaire. The original version of the "How stressful is your life?" (Cohen 1999) as translated and adapted into Bangla by (Fahim 2001) was used to measure life stress. There are 10 items in the life stress scale. The scale was 5 points Likert-type scale. For the items 1, 2, 3, 7, 9 and 10 weights have been given as never = 0, rarely = 1, sometimes = 2, often = 3 and constant = 4. On the other hand for 4, 5, 6 and 8 items weights are never = 4, rarely = 3, sometimes = 2, often = 1 and constant = 0. Generally score ranges are 10 to 19 = mild, 20 to 29 = moderate and 30 to 40 = severe. The correlation co-efficient of the Bengali version of the Life Stress Questionnaire with English was found to be 0.90, which was significant at 0.01 levels. The test re-test reliability over a period of 2 weeks was 0.94, which was significant at 0.01 levels. This means that the reliability of the scale was satisfactory.

Procedure

For collecting proper information from the participants, at first, formal permission was taken from the parents and rapport was established with participants. For taking consent, at the beginning, each respondent was briefed about the general purpose of the study. The respondents were also assured that all information given by them would be kept confidential and would be used only for research purpose. Both written and verbal instructions were provided to them for clarification about what to do, and how to fill up all questionnaires. After completion, all the respondents were thanked for their participation.

Results

The purpose of the present study was to examine the mental health of parents having children with autism in relation to parents' gender, age and family income. Obtained data were analyzed by employing independent sample *t*-test, in order to determine the variation in anxiety, depression and stress scores among the parents having children with ASD in terms of parents' gender (Table 1); ANOVA in order to scrutinize whether parents' mental health condition varies according to parents' age (Tables 2 and 3) and family income (Tables 4 and 5). The findings are presented in the following tables.

Table 1 Mean, SD and t-value on Anxiety, Depression and Stress for the Parents having Children with Autism according to Parents' Gender

Variables	Gender of the Parents	N	M±SD	t-test
Anxiety	Father	143	65.68 ± 14.27	9.19***
	Mother	141	83.18 ±17.69	
Depression	Father	143	113.22 ±11.59	9.16***
	Mother	141	126.03 ±11.98	
Stress	Father	143	23.76 ±5.19	8.01***
	Mother	141	29.20 ±6.23	

*** $p < 0.001$

Findings of Table 1 indicate that parents differed significantly in anxiety ($t = 9.19$, $p < 0.001$), depression ($t = 9.16$, $p < 0.001$), and stress ($t = 8.01$, $p < 0.001$) scores in terms of their gender. Results further point out that mothers of children with ASD suffer more from anxiety, depression and stress as compared to children's father.

Table 2 Analysis of Variance on Anxiety, Depression and Stress Scores for the Parents having Children with Autism according to Parents' Age

Variables	Parent's age	SS	df	MS	F
Anxiety	Between Groups	9590.260	2	4795.130	15.875***
	Within Groups	84879.919	281	302.064	
	Total	94470.180	283		
Depression	Between Groups	6343.093	2	3171.547	20.025***
	Within Groups	44504.202	281	158.378	
	Total	50847.296	283		
Stress	Between Groups	1364.516	2	682.258	19.195***
	Within Groups	9987.977	281	35.544	
	Total	11352.493	283		

*** $p < 0.001$

Table 2 reveals that parents having children with ASD varied in terms of their age range for anxiety ($F = 15.875$, $p < 0.001$), depression ($F = 20.025$, $p < 0.001$), and stress ($F = 19.195$, $p < 0.001$). Parents, age ranging from 26 to 35 years, were more anxious, depressed and stressed due to their children's condition.

Post-hoc pair wise comparisons were carried out to see whether difference between the means of all possible pairs were significant or not in case of parental age. The results obtained by using Tukey's method are presented in Table 3.

Table 3 indicates that mean differences were significant for age ranges 26 to 35 years and 36 to 45 years, 26 to 35 years and 46 to 55 years; but not significant for age range 36 to 45 years and 46 to 55 years for anxiety, depression and stress. Table 3 also indicates that in case of anxiety, depression and stress parents age ranging from 26 to 35 years were more anxious, depressed and stressed as compared to parents age ranging from 36 to 45 and 46 to 55 years. Results also revealed that in case of anxiety, depression and stress parents' age ranging

from 46 to 55 years were more anxious, depressed and stressed as compared to parent's age ranging from 36 to 45 years. So it can be said that parents age ranging from 26 to 35 years have higher mental health problem.

Table 3 Post-hoc Tukey test on Anxiety, Depression and Stress Scores for the Parents having Children with Autism according to Parents' Age

Variables	(I) Age Range (yr)	(J) Age Range (yr)	Mean Difference	Std. Error
Anxiety	26-35	36-45	12.332*	2.238
		46-55	11.271*	3.530
	36-45	26-35	-12.332*	2.238
		46-55	-1.061	3.380
	46-55	26-35	-11.271*	3.530
		36-45	1.061	3.380
Depression	26-35	36-45	10.167*	1.620
		46-55	8.086*	2.556
	36-45	26-35	-10.167*	1.620
		46-55	-2.081	2.448
	46-55	26-35	-8.086*	2.556
		36-45	2.081	2.448
Stress	26-35	36-45	4.621*	0.768
		46-55	4.430*	1.211
	36-45	26-35	-4.621*	0.768
		46-55	-0.191	1.160
	46-55	26-35	-4.430*	1.211
		36-45	0.191	1.160

*$p < 0.05$

Table 4 Analysis of Variance on Anxiety, Depression and Stress Scores for the Parents having Children with Autism according to Family Income

Variables	Income	SS	df	MS	F
Anxiety	Between Groups	10738.563	2	5369.282	18.019***
	Within Groups	83731.616	281	297.977	
	Total	94470.180	283		
Depression	Between Groups	8929.894	2	4464.947	29.931***
	Within Groups	41917.401	281	149.172	
	Total	50847.296	283		
Stress	Between Groups	2887.645	2	1443.822	47.929***
	Within Groups	8464.848	281	30.124	
	Total	11352.493	283		

*** $p < 0.001$

Table 4 reveals that parents having children with autism varied in terms of their family income for anxiety ($F = 18.019$, $p < 0.001$), depression ($F = 29.931$, $p < 0.001$), and stress ($F = 47.929$, $p < 0.001$). Results further indicate that when the family income is comparatively low, parents become more anxious, depressed and stressed about their child's condition.

Post-hoc pair wise comparisons were carried out to see whether difference between the means of all possible pairs were significant or not in case of family income. The results obtained by using Tukey's method are presented in Table 5.

Table 5 indicates that mean differences were significant for high and low family income and, medium and low family income in case of anxiety, depression and stress but not significant for high and medium family income in case of anxiety and depression. Table 5 also indicates that in case of anxiety, depression and stress parents from high income group express lower anxiety, depression and stress than parents from medium and low income group. Results also revealed that in case of anxiety, depression and stress parents from medium income group express lower anxiety, depression and stress than parents from low income group. So it can be said that parents coming from low income group have expressed higher mental health problem.

Table 5 Post-hoc Tukey test on Stress, Depression and Anxiety Scores for the Parents having Children with Autism according to Family Income

variables	(I) Income Level	(J) Income Level	Mean Difference	Std. Error
Anxiety	High Income	Medium Income	-2.029	4.000
		Low Income	-11.377*	3.677
	Medium Income	High Income	2.029	4.000
		Low Income	-13.406*	2.384
	Low Income	High Income	11.377*	3.677
		Medium Income	13.406*	2.384
Depression	High Income	Medium Income	-0.775	2.830
		Low Income	-12.365*	2.602
	Medium Income	High Income	0.775	2.830
		Low Income	-11.590*	1.687
	Low Income	High Income	12.365*	2.602
		Medium Income	11.590*	1.687
Stress	High Income	Medium Income	-3.430*	1.272
		Low Income	-9.003*	1.169
	Medium Income	High Income	3.430*	1.272
		Low Income	-5.573*	0.758
	Low Income	High Income	9.003*	1.169
		Medium Income	5.573*	0.758

*$p < 0.05$

Discussion

The purpose of the present study was to examine the mental health of parents having children with autism spectrum disorder (ASD) in relation to parents' gender, age and family income. A total of 284 parents of children with autism spectrum disorder (ASD) were selected purposively from different districts of Rajshahi division in Bangladesh for the study. Anxiety of the respondents was measured by administering Anxiety Measuring Questionnaire (Deeba and Begum 2002) and depression of the respondents was measured by applying Depression Measuring Questionnaire (Uddin and Rahman 2005). Adapted Bengali version of Life Stress Measuring Questionnaire (Fahim 2001) originally developed by Cohen (1999) was used to measure the life stress of the same participants. Results of this study denote that parents differed significantly in anxiety ($t = 9.19$, $p < 0.001$), depression ($t = 9.16$, $p < 0.001$), and stress ($t = 8.01$, $p < 0.001$) scores in terms of their gender. Mothers of children with ASD suffer more from anxiety, depression and stress as compared to children's father. This finding was also consistent with some previous researches (Sharpley *et al.* 1997; Nouri 2009; Tarabek 2011) who find that mothers of children with autism reported significantly less mental health. Mothers become more emotionally affected (Gray 2003) and more stigmatized (Gray 1993) by their child's autism. They feel guilt, blame themselves for their children's condition (Tarabek 2011). In Bangladesh, mothers are usually the primary caregiver for children for both typically developing and special needs children. They have to adjust their environment or their communication to suit their child's needs and are more intimately involved in problem solving for their children. They experience more anxiety, depression and stress than fathers. Moreover, in some families, father left his child leaving burden in taking care of their children with the mother only and the mother had to look after her child by herself. Parents also varied in terms of their age for anxiety ($F = 15.875$, $p < 0.001$), depression ($F = 20.025$, $p < 0.001$), and stress ($F = 19.195$, $p < 0.001$). Parents, age ranging from 26 to 35 years, were more anxious, depressed and stressed due to their children's condition. Comparatively, the young parents of children with autism become more anxious, depressed and stressed because of their sufferings. They become worried about their beloved child's present and future. They become puzzled about what to do. As soon as parents become aware of their child's exceptionality, they are inevitably shocked and painfully surprised (Gregory 1991). Many parents may feel the desire to hide the diagnosis, or even the individual with disability, from the world in order to avoid societal criticize and laughter. Parents struggle in dealing with the loss of their hopes for the perfect child. All these things make them anxious and they become more depressed and stressed. With time and maturity, the intensity of their distress and anxiousness due to their children's ASD reduce. If they fail to cope with their sadness, wariness, ultimately with the demands of the situation, they may suffer from severe depression at their middle age compared to their early parenthood period. Also, anxiety ($F = 18.019$ $p < 0.001$), depression ($F = 29.931$, $p < 0.001$), and stress ($F = 47.929$, $p < 0.001$) scores varied significantly according to family

income discrepancy for parents who have autistic children. Parents from low income families were more anxious, depressed and stressed for their children with ASD and it is supported by the previous findings (Gupta and Singhal 2005; Mansell and Morris 2004; Chimeh *et al*. 2008). Diagnosis of a child with ASD is associated with lifetime costs to an individual, their family and the community. The expenditure obstacles often initiate prior to diagnosis which can turn a middle-income family into a low-income family in a matter of months. The financial burden related to the treatment and management of ASD makes the parents anxious, depressed and stressed.

Conclusion

Having a child with ASD unfavorably affects the parent's life. The nature of the disability has an impact on the mental well-being of the parents. The majority of the parents, especially mothers, with children with autism spectrum disorder are in the clinical range of anxiety, depression or stress, which is alarming. An individual with autism and his family need positive support and they need to know that they are respected as individuals and as human beings. Counseling, therapy and training, either individually or in groups, can help parents during this time to overcome the stress, anxiety and sadness that they are undergoing and learn proper coping strategies. Ongoing education program, cost-effective services can be promoted to reduce the gaps in parental knowledge and to strengthen family coping and adjustment proficiency. In addition, future studies should address evidence-supported mental health interventions for enhancing the psychological wellbeing of the children affected by ASD and their parents and families.

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