



Original Article

Emotional Recognition of Children with Down Syndrome and Normally Developing Children: A Comparative Cross-Sectional Study

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ABSTRACT

Psychologists have tried to explain emotions since centuries ago they have tried to identify different types of emotions. Emotions are basically mental experiences that can lead to pleasant or unpleasant moods. Emotions influence our perception and social communication. For Down Syndrome being social can also be determined by emotional recognition. It plays an important role for social interaction which is recognized by emotions and helps them to regulate it for social interaction. Basic emotions which are included in this study are happiness, sadness, and aggressive facial expressions. **Objective:** To determine the level of emotional regulation through emotional recognition by facial expressions in down syndrome compared to normally developing children. **Methods:** This was a comparative cross-sectional study. Emotional Recognition Questionnaire Version 7-6/2012 was used. Data on children with down syndrome were collected from special education centres of Lahore and data on normally developing children was collected from the private schools by using standardized tools. The total sample size was 384 calculated by using an online calculator. Data were analyzed using SPSS 21. **Results:** The results showed that people with down syndrome were good at identifying emotions of happiness, sadness, anger, and worry when compared with normally developing children. Their ability to recognize facial expressions helps down syndrome children for socialization. **Conclusions:** It was concluded that children with down syndrome can recognize and regulate emotions and emotion of happiness is more easily recognized than the other emotions when it was compared to normally developing children.

INTRODUCTION

Emotions are mental experiences that can lead to pleasant or unpleasant moods. Emotions influence our perception and social communication. Emotional intelligence is the ability of a person to function purposefully and to communicate with others in a socially acceptable manner [1]. Emotional recognition is a subgroup of emotional intelligence it is an individual's ability to express and control emotions. Down syndrome disorder is a chromosomal disorder that occurs in 1 in 1800 to 1000 live births approximately. Down syndrome children show more strength in social functioning and they use social skills to compensate for their weaker domains [2]. Down syndrome children use emotional regulation for their social competence. For being social Down syndrome children are

mostly described as "cheerful" and "generous" as compared to other syndromes. Down syndrome children usually have fewer behavioral problems. It is also evident that cognitive, social, linguistic, and emotional phenotypes of down syndrome children are already emerging in the early years of their life [3]. Down syndrome is a chromosomal disorder that results in an additional and partial copy of chromosome 21. Down syndrome children have different features, they have a small head, face, ears, flat nasal bridge, and outward inclined eyes [4]. There are four types of Down syndrome and among them, trisomy 21 has a 94% chance [5]. The children born with Down syndrome are typically increasing in the world and it is also linked with the mother's age. For emotional recognition, the parents who

show more emotional involvement for their children during playtime have better cognitive functioning for emotional recognition. Down syndrome children can recognize anger, fear, and happiness [6]. Emotions are central to human functioning from birth to death. In human life importance of emotions cannot be denied because the saturation of thoughts depends upon emotions. Social and cognitive development also depends upon emotions [7]. Emotional regulation involves the management and organization of our neurological, cognitive, facial, and behavioral systems. For social interaction, emotional understanding plays an important role. It is clear that down syndrome children can recognize happy, sad, and angry emotions. Emotional perception was examined by facial expressions and cognitive emotion regulation [8-10]. It is studied that interest and friendliness depend upon emotional knowledge. Down syndrome children can recognize and respond to emotions very well.

METHODS

The comparative cross-sectional survey was conducted from January to June 2018. The study was six months long. This is a quantitative research and convenient sampling technique was used and research data were collected from Lahore by using standardized questionnaire. For Down Syndrome Children data were collected from different special education centres of Lahore. For normal children data were collected from private schools. Consent form was filled out by the institutes. Data were collected from both down syndrome and normally developing children by using standardized tool. The Inclusion Criteria for this research was down syndrome, mild to moderate mental level, IQ Level Pre diagnosed by Psychologist and their age range may be between 4 to 13 years. Exclusion Criteria was down syndrome children having other co-morbid conditions. The parents were taken under confidence and a consent was filled out to keep ethical values a step ahead and it was assured that their personal information was remain confidential. The total sample was 384 calculated through online calculator by using level of Significance 95% and 5 % Confidence Interval. Convenient Sampling Techniques was used in this research. Down syndrome Mild to Moderate mental level was selected for research. The IQ Level of Down syndrome was Pre diagnosed by Psychologist for research. Age range between 4 to 13 years for Down syndrome was selected for conduction of study. Emotional Recognition Questionnaire Version 7-6/2012 was used. The SPSS 21.0 was used to analyze data statistically. The study was based upon interpretation and analysis of the data. For the analysis Quantitative Research approach was used the t-test was applied. The nature of the data was quantitative.

RESULT

The objective of the study was to determine the level of emotional regulation through emotional recognition of different facial expressions which was based upon recognition of emotions like happiness, fear, sadness, anger and scared in down syndrome children as compared to normally developing children [8]. Figure 1 shows the gender distribution. 250 were down syndrome males and 237 were normally developing male and 134 were down syndrome females and 147 were normally developing females participated in this study.

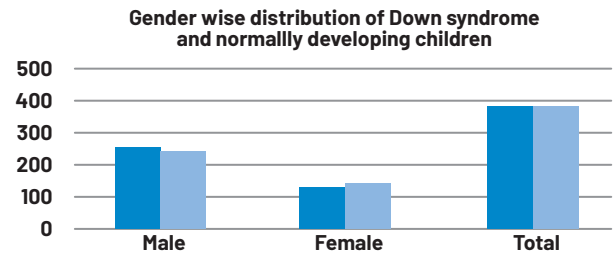


Figure 1: Gender of Participants (Down syndrome and normally developing Children)

This Figure 2 showed that between 4-8 years the frequency was 66 and 17.2 % participants fall in this age range and answered the questions while 9-13 years of age range had frequency of $f = 318$ at 82.81% which showed that most of the participants were in age range between 9-13 years. Down syndrome children mostly fall between age range of 9-13 years at p vale 0.005 which is significant.

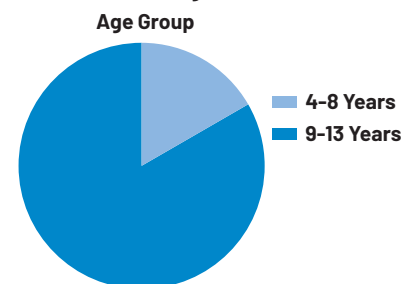


Figure 2: Age group of the Participants (Down syndrome and Normally Developing Children)

Table 1 showed that Down Syndrome children aged between 4-8 years that selected emotions of happiness were 268 which shows the frequency of selecting emotion of happiness is 69.8% and 73 participants had chosen sad emotion with a frequency 19.0%. Emotions of anger was selected at the frequency of 6.0% and emotions of scared was selected at the frequency of 5.2% which is significant at $\alpha=0.05$.

Table 1: Frequency of responses by Participants (Down syndrome and normally developing Children)

| Options | Frequency (%) of Down Syndrome Children | Frequency (%) of Normally developing Children |
|---------|---|---|
| Happy | 268 (69.8%) | 270 (73.0%) |
| Sad | 73 (19.0%) | 71 (14.0%) |
| Scared | 20 (5.2%) | 20 (7.0%) |
| Angry | 23 (6.0%) | 23 (6.0%) |
| Total | 384 (100%) | 384 (100%) |

DISCUSSION

This research was conducted to explore the cognitive emotional regulation of Down syndrome children by recognition of facial expressions because facial expressions play an important role in recognition of emotions [11]. In Down Syndrome Children the facial expression was used to identify emotions by a pictorial questionnaire. The result showed significant values $p=0.05$ level of significance. The down syndrome children was good in identifying emotions of Happiness, sadness, anger, worry, scared. Down syndrome children can recognize emotions by facial expressions and results showed that down syndrome are good in recognizing happiness and anger [12]. In this study four emotional expressions are used which include happy, sad, scared and anger facial expression [13]. This study contributes to the literature on the emotional regulation of Down syndrome children. It helps to understand the early emotional development of Down syndrome children. Several findings from this study are notable, first emotional recognition by facial expressions for regulating cognitive mapping and perceptions of emotions for down syndrome children. Perception of emotions helps them to be more social [14]. For down syndrome children perception of emotions compared to normally developing children is 268 times 69.8% for emotion of happiness which was recognized by using questionnaire. For the emotional regulation the Down syndrome had mean percentile in the 62nd percentile was (SD=21.26) whereas for comparison group for 52nd percentile (SD=27.68). Both groups showed similar emotion regulation performance [15]. The scores suggest that better emotional recognition helps Down syndrome children to be more socially oriented. It is suggested that individual with Down syndrome overuse their social skills to compensate for their weaker domains of functioning [16]. Findings suggest that Down syndrome children can recognize happy and sad emotions 268 at 69.8%. It was also noted the happy and sad expressions are mostly answered rather than scared and worried. Down syndrome children are social with others during their routine conversation which also impacts positively upon their choosing emotion. Studies have reported that Down Syndrome children have difficulties in recognizing emotions however they can

discriminate between happy and sad emotions. This research was aimed to assess that down syndrome children are as good as normally developing children in recognizing emotions [17]. In the self-regulation of children with down syndrome, development of language and communication plays an important role. The self-regulation is a broad term which encompasses the ability to control behavior and adaptation to variety of dimensions including emotion and cognition. For the self-regulation of down syndrome emotional recognition is vital in this research it was found out that emotional regulation is connected with emotional recognition by facial expressions [18]. In a research comprehension of emotion, abstract and concrete are compared with normally developing children it was found out that Down syndrome children shows no emotion lexicon deficient they can easily comprehend emotions. Emotion of happiness is more easily comprehended by them [19]. The social domain includes emotions and emotional regulation in Down syndrome. It plays an important role in regulatory function of Down syndrome emotional regulation which supports the children's social abilities and also provides a critical support for advance social functioning. Cognitive performance was selected as relative indicator for emotional regulation the analysis demonstrated that $p<0.005$ which shows that emotions are relative for cognitive development [16]. For the behavior adaptation emotional perception was compared to that emotional perception that plays a vital role for emotional regulation in early development of children with Downs syndrome [19]. Emotional vocabulary makes it easier for typically developing children to identify emotions as compared to Down syndrome it was measured on basic emotions which includes happiness, disgust, surprise and fear. It was analysed that cognitive mapping was prompt by emotional vocabulary of emotions. It was found out that extensive vocabulary of emotions enhances the chances of children and adults with down syndrome to become emotionally competent in their early development of social interactions [20].

CONCLUSIONS

It was concluded that children with Down syndrome's emotional recognition process for emotion of happiness is more than the other emotions when it was compared to normally developing children.

Conflicts of Interest

The authors declare no conflict of interest.

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