JRMI
Journal of Rehman Medical Institute

Volume 10, No. 4
October - December 2024
www.jrmi.pk

ORIGINAL ARTICLE

Assessment of nutritional status of children attending special needs school in district Peshawar

Daud Jabbar Taib, Ayesha Imtiaz, Michelle Jabbar Taib, Sher Bahadur, Ammar Munawar

Submitted
August 22, 2024
Accepted
December 18, 2024

Author Information

Dr. Daud Jabbar Taib
Senior Lecturer
Department of Community Medicine, Jinnah Medical College, Peshawar, Khyber Pakhtunkhwa, Pakistan
(Corresponding Author)
Email: daudjtaib@gmail.com

Dr. Ayesha Imtiaz
Assistant Professor
Institute of Public Health & Social Sciences, Khyber Medical University, Peshawar, Khyber Pakhtunkhwa, Pakistan

Dr. Michelle Jabbar Taib
Medical Officer
Mission Hospital, Peshawar, Khyber Pakhtunkhwa, Pakistan

Dr. Sher Bahadur
Epidemiologist
Khyber Institute of Child Health, Peshawar, Khyber Pakhtunkhwa, Pakistan

Dr. Ammar Munawar
Senior Lecturer
Department of Community Medicine, Pak International Medical College, Peshawar, Khyber Pakhtunkhwa, Pakistan

Citation: Taib DJ, Imtiaz A, Taib MJ, Bahadur S, Munawar A. Assessment of nutritional status of children attending special needs school in district Peshawar. J Rehman Med Inst. 2024 Oct-Dec;10(4):10-4.

ABSTRACT

Introduction: Children with special needs are those who have higher possibility of developing conditions that are emotional, physical, behavioral, developmental or chronic in nature. Approximately 80% of the disabled children are present in Low and Middle-Income Countries (LMICs). There are about 41,760 disabled children in Pakistan and in the Khyber Pakhtunkhwa province, there are around 13,290 disabled children. Special needs children face problems including lack of educational opportunities, malnutrition, inadequate access to health care, no tax exemptions or reductions, no disability benefits, limited employment possibilities, social stigmatization or exclusion, and cultural barriers.

Objective: To assess the nutritional status of children enrolled in special needs schools in district Peshawar.

Materials & Methods: A cross-sectional study was conducted in December 2023 on disabled children between the ages of 10-17 years attending special needs school of Peshawar using simple random sampling and after informed consent. Data were collected in the form of socio-demographic data and anthropometric measures and analyzed by SPSS version 27 for descriptive and comparative statistics, keeping $p \leq 0.05$ as significant. The outcome measure was the Body Mass Index.

Results: There were a total of 300 children with disabilities, with 268(89.33%) male and 32(10.67%) female participants. The findings indicated that 71.67% of the disabled students had healthy BMI and 68.3% had normal MUAC There was also an association between outcome variables (BMI, MUACs) and some of the independent variables (types of disabilities, age).

Conclusion: Majority of the children attending special needs schools of Peshawar have a healthy Body Mass Index and Mid Upper Arm Circumference.

Keywords: Anthropometry; Nutritional Status; Nutrition Assessment; Nutritional Requirements; Body Mass Index; Malnutrition.

The authors declared no conflict of interest. All authors contributed substantially to the planning of research, data collection, data analysis, and write-up of the article, and agreed to be accountable for all aspects of the work.

INTRODUCTION

Children with special needs are defined as children that have a higher possibility of developing conditions that are emotional, physical, behavioral, developmental, or chronic in nature.[1] The Center for Disease Control and Prevention (CDC) has information regarding birth defects and developmental disabilities including hearing loss, vision loss, language and speech disorders, Tourette syndrome, Developmental Disability, Intellectual Disability, and Learning Disorders that can affect children and their daily living.[2]

Globally, it is estimated that there are about 1 billion disabled people and according to World Health Organization (WHO) estimates the projected figure will likely increase two-fold by the year 2050.[3] According to the United Nations International Children's Emergency Fund's (UNICEF) Disability Prevalence Estimate, globally there are about 240 million children that have some degree or type of disabilities.[4] People with disabilities barely have access to different health as well as social services and the professionals (health care and nutritional) sometimes do not know or understand the problem and its solution or they are inadequate to communicate with the disabled population and their families.[5]

In children with special needs, nutrition is a very essential health component and there are many nutritional problems (such as feeding, metabolic abnormalities, unhealthy diet, need and expenditure of energy) that can be found in these children.[6]

Evidence from the United Nations Educational, Scientific and Cultural Organization (UNESCO) shows that children belonging to a poor household have a higher chance of being at risk of disability or impairment due to malnutrition. Fifty percent of the disabilities happen mainly due to avertible or avoidable factors whereas 20% are due to malnutrition according to a report by DFID.[7] An article published by UNICEF reported that even though the Operation Manual: Out-of-School Children Initiative (OOSCI) is currently used by many countries to provide education to disabled children, but many barriers are affecting these children to attain education i.e. negative attitude, discrimination, superstition, and no knowledge of rights for disabled children.[8]

A report compiled by UNICEF states that disabled children have rights to attain various healthcare services under CRC and CRDP, which include nutrition, hygiene, education, immunization, information on different health-related topics, treatment for disability and diseases,[9] also different programs (meal, WASH, recreational), after school activities.[10]

Approximately 80% of disabled people are living in Low- and Middle-Income Countries (LMICs). Disabled children still remain one of the excluded, discriminated against and ostracized individuals.[3] Disability and Malnutrition affect the population globally, but it ever excessively affects the population living in the LMICs and there is a link between the associated factors of malnutrition and disability.[11] Pakistan is labeled as a Lower Middle-Income Country by the World Bank, where the disabled population falls behind on numerous resources.[12]

According to Pakistan's ICT Rights of Persons with Disability Act 2090, disability is defined as "A long-term physical or mental condition that limits a person's movements, senses or activities and shall include physical, mental, intellectual and developmental disorders or sensory impairments".[13]

The Pakistan Bureau of Statistics conducted a survey and based on the data from NADRA (2020), projected that 371,833 people have disabilities including speech impairment, blindness, deafness, mental disabilities, and physical disabilities across Pakistan but there can be a possibility that the data reported to the facilities in charge might be incomplete.[12]

According to the Pakistan Bureau of Statistics disability details from 2020 to 2021, there are about 41,760 disabled children in Pakistan, and in the province of Khyber Pakhtunkhwa (KP), there are around 13,290 disabled children.[14]

Special needs people and their families can have difficult and strenuous lives due to the lack of educational opportunities, nutritional problems, inadequate access to health care, disability benefits, limited employment possibilities, social stigmatization or exclusion, cultural and religious barriers.[15]

A study was conducted in the district of Lower Dir, to check the problems faced by disabled children, and some of these barriers include disability as stigma, negative attitude, financial burden, cursed, lack of access to education, psychological, transportation, etc.[16]

A survey in Karachi among the teachers of both the public and private schools regarding their knowledge of autism, about 55% of teachers knew about autism but only through media, and only 9% of the teachers were trained through workshops to handle children with autism.[17]

Some of the main reasons for disabilities to be prevalent in children include poverty, genetics, natural disasters, accidents (industrial and traffic), diseases, and malnutrition,[18] and disability can also occur due to the practices of consanguineous marriage culture.[19] According to a survey, disabled females have less possibility of getting admission to school compared to disabled males.[20]

The current study was conducted to assess the nutritional status of children enrolled in special needs school in District Peshawar.

MATERIALS & METHODS

A cross-sectional study was conducted in December 2023 through simple random sampling in schools for children with special needs in district Peshawar. Participants were enrolled in the study based on the inclusion (children between age of 10-17 years, enrolled in special needs school) and exclusion (children with extreme disabilities) criteria. The selected institutes were contacted via phone calls and meetings with the head of the institutes were arranged. After approval from KMU-ASRB and the Ethical Board, the approval letters for conducting research were provided to the heads of the institutes, and their signature of approval was taken on the approval letters. Questionnaires consisting of socio-demographic data were provided to the schools for distribution to the children between the ages of 10-17 years to be filled by the parents for day scholars, or guardians if the child was living in the hostel.

The questionnaires were first translated into Urdu with the help of 2 Language experts and were tested on a group of 30 people to check if they understood the questionnaires and the response was positive. After the questionnaires were returned, anthropometric measurements (consisting of weight, height, and mid-arm circumference) were taken with the help of the school staff as the children were impaired and needed to be expertly handled during the measurement process.

The total number of students in the schools for children with special needs were 950. Using OpenEpi software for sample size calculation, taking the population size as 950, the anticipated frequency at 50%, and the absolute precision at 5%, the calculated sample size at the 95% confidence level was 274. With a 10% non-response rate, the final sample size was kept as 300 children in the age group of 10-17 years. Data were analyzed by SPSS version 27. For categorical variables, frequency and percentages were reported. Chi-square and Fisher's exact test were used to determine the association of outcome with independent variables. For any associations among variables, $p \leq 0.05$ was considered significant.

RESULTS

There were 300 students with disability who participated in this study. The data was collected via anthropometric measurements and questionnaires. Of these 300 students from whom the questionnaire was collected, 253(84.3%) students were day scholars, and 47(15.7%) of the remaining students were living in hostels (Table 1).

Table 1: Residential status of subjects (n=300).

Place of residence	Frequency (f)	Percent (%)
Day Scholars	253	84.3
Hostelites	47	15.7
Total	300	100

Table 2 shows the Body Mass Index (BMI), Mid Upper Arm Circumference (MUAC) of disabled children, and types of disabilities in children studying in school for special needs. Majority of the disabled children have a Healthy BMI (between 5th and less than 85th percentile) i.e. 215 (71.67%) out of 300 students. Whereas 205 (68.3%) out of 300 students have a normal

MUAC. There were 76 (25.33%) visually impaired children, 26 (8.67%) children were physically disabled, and the least minority of the disabled children that participated in the study were mentally and intellectually disabled students with 23 (7.67%) students.

Table 2: Distribution of BMI, MUAC & the types of disabilities of children (n=300).

Variables	Frequency (f)	Percent (%)
Body Mass Index (BMI)		
Underweight (Less than 5th Percentile)	47	15.7
Healthy Weight (Between 5th and less than 85th Percentile)	215	71.5
Overweight (Between 85th and less than 95th Percentile)	26	8.7
Obesity (Equal or Greater than 95th Percentile)	12	4
Total	300	100
Mid Upper Arm Circumference (MUAC)		
Normal (> or = 18.5 cm for age 10-14 years) (> or = 22cm for age 15-17 years)	205	68.3
Underweight (16-18 cm for age 10-14 years) (18.5-21.9 cm for age 15-17 years)	82	27.3
Overweight (27.7cm)	13	4.3
Total	300	100
Types of Disabilities		
Deaf & Dumb	175	58.33
Visual Impairment	76	25.33
Physical Disability	26	8.67
Mental & Intellectual Disability	23	7.67
Total	300	100

The association between Body Mass Index (BMI) and Disabilities of the students attending special needs school is shown in Table 3. A total of 215 students out of 300 have a healthy BMI, 47 are underweight, and 28 are either overweight or obese. Employing the Fisher Exact test as the Chi-square test cannot be used because, 7 cells (43.8%) have an expected count less than 5, with the *p*-value of 0.05 which is borderline significant and shows that there is an association between BMI (outcome variable) and Disabilities of the student (independent variable).

Table 3: Association between BMI & type of disability in children (n=300).

Types of disabilities	Body Mass Index (BMI				p value
	Underweight	Healthy Weight	Overweight	Obese	
Deaf and Dumb	34	123	16	02	0.05
Visual Impairment	08	55	07	06	
Physical Disability	03	21	01	01	
Mental & Intellectual Disability	02	16	02	03	

Table 4 displays the association between MUAC and the type of disabilities in the students. The result shows that out of 300 students, 135 (45%) students were deaf and dumb with normal MUAC, and 38 (12.7%) students were visually impaired. At the same time, has normal MUAC, 19 (6.33%) students were physically disabled with normal MUAC, and 13 (4.33%) students were mentally and intellectually disabled while having normal MUAC. Fisher Exact test was applied instead of the chi-square test because 3 cells (25%) have an expected count less than 5 and a *p*-value of 0.0001 which is significant. So, there is an association between the outcome variable (MUAC) and the independent variable (types of disabilities in students).

Table 4: Association between MUAC & type of disability in children (n=300).

Types of disabilities	Mid Upper Arm Circumference (MUAC)			p value
	Normal	Underweight	Overweight	
Deaf and Dumb	135	36	04	0.0001
Visual Impairment	38	32	06	
Physical Disability	19	07	0	
Mental & Intellectual Disability	13	07	03	

DISCUSSION

Sufficient nutrition is vital for children's development (physical, mental, and social). Children with malnutrition may grow up to have lower physical and cognitive abilities and a higher chance for diseases, and other developmental disability than other normal children.[21] A study conducted in Egypt that focused on the nutritional status of disabled children with children aged between 6-14 years, reported about 146 students with disability to have normal BMI as compared to this study where about 215 disabled students have normal BMI out of which 122 students are between the ages of 10 -14 years. The difference in results in both the Egyptian study and this current study is because of the

number of students that participated, below 14 years of age as this study also includes students between the ages of 15-17 years also the sample size of the two studies was different.[22] According to the study conducted in Spain, they have 6 children who are obese or overweight, 16 with healthy BMI, and 6 underweight within the age group of 5-23 years with *p*-value of 0.382 and 1. This study has 38 obese or overweight, 215 healthy, and 47 underweight within the age group of 10-17 years with a *p*-value of 0.064. The difference can be with the techniques used for assessments, where the Spanish study used WHO growth standards for BMI, this study used CDC standards to determine the BMI.[23] A Bosnian study on the nutritional status of disabled people below 18 years with a total sample size of 80 out of which 38 people were underweight whereas 9 people were obese. As for this study, 47 people were underweight, 26 were overweight and 12 were obese. The *p*-value of BMI in the first study was >0.05 and for the current study is 0.05.[24] A Malaysian study reported 22 children were underweight between the ages of 5-18 years with a BMI *p*-value of <0.001, whereas in the current study 47 students were underweight while having a BMI *p*-value of 0.064 (BMI against the age of participants). The MUAC against the age of the participants with *p*-values of both studies is 0.017 and 0.109 respectively.[25] Mini-Nutritional Assessment (MNA) along with an anthropometric measurement method was used in a study conducted in India, with interviews being conducted it was reported that out of 300 people half were malnourished whereas the current study conducted anthropometric measurement with questionnaires distributed to parents in which out of 300, 215 participants had a healthy BMI.[26]

CONCLUSION

This study aimed to assess the nutritional status of children with disabilities attending special needs schools by anthropometric measurement, physical activity, and nutritional or dietary assessment. As the results suggest that most of the disabled children have a healthy BMI whereas MUAC of the children with disabilities have predominantly normal Mid Upper Arm Circumference (MUAC). Regardless of the results, further efforts and research are needed, so the problems related to disabled children can be addressed more efficiently.

RECOMMENDATIONS

1. There should be various programs or seminars at the school and community level to discuss the importance of nutrition and physical activity in children with disabilities.
2. Government should make and implement policies regarding the health and safety of disabled children.
3. The schools should be provided with resources (human, health, financial, infrastructural), so they can cater to the needs of the disabled children.

LIMITATIONS

Limitations of the study are as follows:

1. This study only covered a limited population which only included the disabled children in special needs schools in Peshawar, it did not cover the out-of-school.
2. The number of female participants was very few compared to their male counterparts because most of the female students were non-compliant or were not comfortable with the anthropometric measurement and the questionnaire.
3. There was a lack of resources (human, time, and budget) to conduct the study on a large scale.

REFERENCES

1. Farha E, Said NM. Assessment of nutritional status of children with special needs. Egyptian Family Med J. 2021 Nov 1;5(2):20-32.
2. CDC. Child Development Specific Conditions | CDC [Internet]. Centers for Disease Control and Prevention. 2020. Available from: https://www.cdc.gov/ncbddd/childdevelopment/conditions.html
3. Thota A, Mogo E, Igbelina D, Sheaf G, Mustafa R, Bakrania S, et al. Effectiveness of Inclusive Interventions for Children with Disabilities in Low-and Middle-income Countries Protocol for an evidence and gap map [Internet]. 2022 [cited 2024 Apr 23]. Available from: https://www.unicef-irc.org/publications/pdf/Effectiveness-of-Inclusive-Interventions-for-Children-with-Disabilities-in-Low-and-Middle-income-Countries-Protocol-for-an-evidence-and-gap-map.pdf
4. Olusanya BO, Kancherla V, Shaheen A, Ogbo FA, Davis AC. Global and regional prevalence of disabilities among children and adolescents: analysis of findings from global health databases. Front Public Health. 2022:3276.
5. Groce NE, Kerac M, Farkas A, Schultink W, Bieler RB. Inclusive nutrition for children and adults with disabilities. The Lancet Global Health. 2013 Oct 1;1(4):e180-1.
6. Cloud HH. Update on nutrition for children with special needs. Topics Clin Nutrition. 1997 Dec 1;13(1):21-32.
7. Singal N. Education of children with disabilities in India and Pakistan: an analysis of developments since 2000. Prospects. 2016 Aug 11;46:171-83. doi: 10.1007/s11125-016-9383-4.
8. Graham N. "Children with disabilities". Background paper prepared for Fixing the Broken Promise of Education for All: Findings from the Global Initiative on Out-of-School Children. Montreal: UNESCO Institute for Statistics. 2014.
9. UNICEF. The State of the World's Children. Children with Disabilities 2013. [Web document]. 2013 May [cited 2024 Feb 20]. Available from: https://violenceagainstchildren.un.org/sites/violenceagainstchildren.un.org/files/documents/other_documents/sowc_2013-main_report_en.pdf.
10. World Bank Group. Disability Inclusion Overview [Internet]. 2022. Available from: https://www.worldbank.org/en/topic/disability.
11. Hume-Nixon M, Kuper H. The association between malnutrition and childhood disability in low-and middle-income countries: systematic review and meta-analysis of observational studies. Trop Med Int Health. 2018 Nov;23(11):1158-75.
12. Shaukat S. Challenges for education of children with disabilities in Pakistan. Intervention in School and Clinic. 2022 Oct 18:10534512221130082.
13. The Pakistan Code. Ministry of Law and Justice. ICT Rights of Persons with Disability Act, 2020. [Internet]. Government of Pakistan. [cited 2024 Feb 19]. Available from:

https://na.gov.pk/uploads/documents/1578658292_632.pdf.

14. Pakistan Bureau of Statistics. Government of Pakistan. Disability Statistics. Disability from Census. [Internet]. Pbs.gov.pk. 2021. Available from: https://www.pbs.gov.pk/content/disability-statistics.
15. Jafree SR, Burhan SK. Health challenges of mothers with special needs children in Pakistan and the importance of integrating health social workers. Soc Work Health Care. 2020 Jul 2;59(6):408-29.
16. Hussain S, Munir A, Ibrar M. Children with disability: problems and challenges in Pakistan. J Humanit Soc Sci. 2020 Dec 31;28(1):87-99.
17. UK Government. Review of evidence on disability programmes in south Asia. Amaltas Institute of Human Development. 2019. Available from: https://assets.publishing.service.gov.uk/media/5de514a5e5274a65d401b7f5/Amaltas_IHD_Disability_in_South_Asia.pdf
18. Ahmed T. The population of persons with disabilities in Pakistan. Asia Pac Popul J. 1995 Mar 1;10(1):39-62.
19. Morton R, Sharma V, Nicholson J, Broderick M, Poyser J. Disability in children from different ethnic populations. Child Care Health Dev. 2002 Jan;28(1):87-93.
20. Penagini F, Mameli C, Fabiano V, Brunetti D, Dilillo D, Zuccotti GV. Dietary intakes and nutritional issues in neurologically impaired children. Nutrients. 2015 Nov 13;7(11):9400-15.
21. AbdAllah AM, El-Sherbeny SS, Khairy S. Nutritional status of mentally disabled children in Egypt. Egyptian J Hospital Med. 2007 Oct 1;29(1):604-15.
22. Farha E, El-Esrigy FA, Farahat T, Said NM. Assessment of Nutritional status of children with special needs. Egyptian Fam Med J. 2021 Nov;5(2):20-32.
23. Costa A, Martin A, Arreola V, Riera SA, Pizarro A, Carol C, Serras L, Clavé P. Assessment of swallowing disorders, nutritional and hydration status, and oral hygiene in students with severe neurological disabilities including cerebral palsy. Eur J Paediatr Neurol. 2016;20:810-5.
24. Melunovic M, Hadzagic-Catibusic F, Bilalovic V, Rahmanovic S, Dizdar S. Anthropometric parameters of nutritional status in children with cerebral palsy. Mater Sociomed. 2017 Mar;29(1):68-72.
25. Ong SH, Chen ST. Diagnosis of malnutrition in children and adolescents with identified developmental disabilities (IDD) using subjective global nutrition assessment (SGNA). J Trop Pediatr. 2022 Jan 7;68(1):fmac007. doi: 10.1093/tropej/fmac007.
26. Gnanaselvam NA, Vinoth Kumar SP, Abraham VJ. Assessment of nutritional status of people with disabilities in rural Tamil Nadu using mini nutritional assessment scale. Curr Nutr Food Sci. 2018 Aug 1;14(4):341-9.