JOURNAL OF SMMAMC

Volume 2 | Issue 2 | December 2021

INFORMATION FOR AUTHORS

This is a peer-reviewed journal which considers any original research contribution that manifest clinical practice and informative reviews on any topic connected with medical field. Whether you are thinking of submitting your paper for the first time, our journal is here to support you. Following information will guide you whatever your needs might be. We hope you'll join us and choose to publish with a journal that supports you.

Manuscript Submission

- Electronic submission of manuscripts in a single MS word file is strongly encouraged
- If a paper version of the manuscript is submitted, send the required number of copies of the manuscript and figures; they are all needed for peer review and editing
- Manuscripts must be accompanied by a cover letter, conflicts of interest form, authorship and declaration, pro-forma of which is available in the Journal website
- Correspondences with editor through e-mail attachment to the editorial office at: smmamcj@gmail.com

Article Types

Three types of manuscripts may be submitted:

Original Articles: These should be given in sufficient detail for others to verify the work. Length: upto 5000 words.

Review Articles: Submissions of reviews and perspectives covering topics of current interest are welcome and encouraged. Length: upto 5000 words.

Case Reports: This should cover uncommon and/or interesting cases with appropriate confirmation process. Length: upto 3000 words.

Preparation:

Assamble manuscript in the following order :

1. Title page
2. Abstract
3. Text
4. References

1. Title Page

The title page should have the following information:

- Article title: Brief, relevant & self-explanatory. Subtitles should not be used unless they are essential
- Authors' names and institutional affiliations with their full address
- The name, mailing address, telephone and e-mail address of the corresponding authors
- Avoid abbreviations in the title of the manuscript
- The number of figures and tables
- Disclaimers, if any

2. Abstract

- Should be limited to 300 words for original or review articles and 200 wards for case reports
- The summary of original and review articles should provide the introduction of the study and should state the study's purpose, basic procedures, results or main findings and a brief conclusions in a single paragragh
- The summary of case reports should provide the introduction of the study, case study and a brief conclusions in a single paragragh

3. Text

Original Article:

Introduction (upto 600 words), Materials and methods, Results, Discussion, Conclusion (upto 150 words).

Review Article:

Introduction (upto 600 words), Materials and methods, Findings and Discussion, Conclusion (upto 150 words).

Case Report:

Introduction (upto 600 words), Case summary, Discussion, Conclusion (upto 150 words).

Introduction

- Ward limits: 600 wards
- Provide a context or background for the study
- State the specific purpose or research objectives
- Should state the rationale or justification of the study
- Provide only directly pertinent primary references

Methodology

- Must provide: Type of study, study period, sampling technique, sample size, study population
- Should state about ethical approval & patient consent
- Should mention about data collection technique & tools, data handling, processing & data analysis
- For review articles how the review was done, what sorts of article were searched, how they were searched, the total number of articles were reviewed must be mentioned
- Specify the computer software used
- Define statistical terms, abbreviations, and most symbols

Results

- Findings should be described in past tense
- Supplemented with tables, figures and illustrations
- Same data should not be presented both table and figure
- Please keep the result in the sequence of specific objective selected earlier

Discussion

- Reflect the author's comment on the results
- Emphasize the new and important aspects of the study
- Comparison with relevant study findings.
- Should be described in past tense
- State about some limitations of the study
- Do not repeat in detail data or other information given in the 'Introduction' or the 'Results' section

Conclusion

- Give your conclusion
- Any recommendation

Body of Case report

- Introduction: Brief description on the topic of the case.
- Case summary: Summary of the findings of the case and management (if any)
- Discussion & Conclusion

4. References

- To be consistent
- Vancouver style
- Numerical order & in the same order
- Citation numbers: outside full stops and commas, inside colons and semicolons
- Small numbers of references to key original papers often serve well
- Avoid using abstracts as references
- Identify references in text, tables, and legends by Arabic numerals in superscript

Examples of correct forms of references are given below:

If the work you need to reference has more than six authors, you should list the first six authors, followed by 'et al.'

- Petrie KJ, Muller JT, Schirmbeck F, Donkin L, Broadbent E, Ellis CJ, et al. Effect of providing information about normal test results on patients' reassurance: randomised controlled trial. British Medical Journal. 2007;334(7589): 352–254.

Book with one author or editor:

- Mason J. Concepts in dental public health. Philadelphia: Lippincott Williams & Wilkins; 2005.

Books with more than six authors/editors:

- Fauci AS, Braunwald E, Kasper DL, Hauser SL, Longo DL, Jameson JL, et al., editors. Harrison's principles of internal medicine. 17th ed. New York: McGraw Hill; 2008.

Chapter in a book:

Partridge H, Hallam G. Evidence-based practice and information literacy. In: Lipu S, Williamson K, Lloyd A. (eds.) Exploring methods in information literacy research. Wagga Wagga, Australia: Centre for Information Studies; 2007. p.149–170.Government

E-book:

- Irfan A. Protocols for predictable aesthetic dental restorations [Internet]. Oxford: Blackwell Munksgaard; 2006 [cited 2009 May 21]. Available from Netlibrary:http://cclsw2.vcc.ca:2048/login?url=http://www.netLibrary.com/urlapi.asp?

Journal article: print

- Chhibber PK, Majumdar SK. Foreign ownership and profitability: Property rights, control, and the performance of firms in Indian industry. Journal of Law & Economics. 1999;42(1): 209–238.

Journal article: online/electronic

- Errami M, Garner H. A tale of two citations. Nature. 2008;451(7177): 397–399. Available from:http:// www.nature. com/ nature/journal/v451/ n7177/full/451397a. html [Accessed 20th January 2015].

For newspaper articles:

- Fayerman P. Women must now wait to 40 for publicly paid amnio test. Vancouver Sun. 2009 Jun 9; Sect. A:5.

Document:

- Canada. Environmental Health Directorate. Radiation protection in dentistry: recommended safety procedures for the use of dental x-ray equipment. Safety Code 30. Ottawa: Ministry of Health; 2000.

Report

- Leatherwood S. Whales, dolphins, and porpoises of the western North Atlantic. U.S. Dept. of Commerce. Report number: 63, 2001.

Web page/website

- European Space Agency. Rosetta: rendezvous with a comet. Available from: http://rosetta.esa.int [Accessed 15th June 2015].

Dictionary, Encyclopedia or Similar reference book:

- Murchison DF. Dental emergencies. In: Merck Manual of Diagnosis and Therapy [Internet]. 18th ed. Whitehouse Station (NJ): Merck; 2009 [last modified 2009 Mar; cited 2009 Jun 23]. Available from: http://www.merck.com/mmpe/sec08/ch096/ch096a.html

Electronic material

- World Health Organization (WHO). Mortality country fact sheet 2006 [internet]. Geneva: WHO; 2006. Available from: www.who.int/whosis/mort_emro_pak_pakistan.pdf

Conference proceeding: individual paper

- Wittke M. Design, construction, supervision and long-term behaviour of tunnels in swelling rock. In: Van Cotthem A, Charlier R, Thimus J-F, Tshibangu J-P. (eds.) Eurock 2006: multiphysics coupling and long term behaviour in rock mechanics: Proceedings of the International Symposium of the International Society for Rock Mechanics, EUROCK 2006, 9–12 May 2006, Liège, Belgium. London: Taylor & Francis; 2006. p 211–216.

Video recordings:

- Dental dam: still the best dry-field technique [DVD]. Provo (UT): Practical Clinical Courses; 2007.

Lecture/presentation

- Wagner G. Structural and functional studies of protein interactions in gene expression. [Lecture] Imperial College London. 12th December 2006.

Email: personal

- Harrison R. Email sent to: Mimi Weiss Johnson. 10th June 2014.

NICE guidelines

- National Institute for Health and Care Excellence (NICE), Tuberculosis: NICE Guideline [NG33]. 2016. Available from: https://www.nice.org.uk/guidance/ng33/resources/ tuberculosis-1837390683589 [Accessed 27th May 2017].

Acknowledgement

Acknowledge any person or institute who have helped for the study.

Editing and peer review

- All submitted manuscripts are subject to scrutiny by the Executive Editor or any member of the Editorial Board
- Manuscripts containing materials without sufficient scientific value and of a priority issue, or not fulfilling the requirement for publication may be rejected or it may be sent back to the author(s) for resubmission with necessary modifications

- Manuscripts fulfilling the requirements and found suitable for consideration will be sent for peer review
- Submissions, found suitable for publication by the reviewer, may need revision modifications before being finally accepted. All accepted manuscripts are edited according to the Journal's style. Finally Editorial Board will decide upon the publish
- Proof of accepted manuscript may be sent to the authors. No addition to the manuscript at this stage will be accepted

General outline for article presentation and format

- Type a single space at the end of each sentence
- Font size should be 12 in Times New Roman
- Margins 1.5 inch from above and 1 inch from rest sides
- Title page contains all the desired information
- Running title provided (not more than 40 characters)
- Headings in title case (not ALL CAPITALS, not underlined)
- Drugs should be given their approved generic name
- References cited in superscript in the text without brackets after with/without comma (,) or full stop (.)
- References according to the journal's instructions–abide by the rules of Vancouver system

Tables & Figures or Illustrations

- No repetition of data in tables/graphs and in text
- Figures necessary and of good quality (color)
- Table and figure numbers in Arabic letters (not Roman)
- Each table/figure in separate page
- Letters, numbers and symbols in figures should therefore be clear and consistent throughout and large enough to remain legible when the figure is reduced for publications
- Images must be cited within the main text in numerical order and submitted separately
- A brief title (should be bold) with sample number
- Explanatory matter is placed in footnotes, not in the heading
- Numbers, in text and tables should always be provided if % is shown
- Number each figure in the text in consecutive order
- Do not use internal horizontal or vertical lines. Give each column a short or an abbreviated heading
- Try to limit the number of tables/figure

Units of measurements

- Measurements of length, weight, height and volume should be reported in metric units (meter, kilogram or liter) or their decimal multiples
- Measurements stated in SI units
- Authors should report laboratory information in both local and international system of units (SI)
- Drug concentrations may be reported in either Si or mass units but the alternative should be provided in parentheses where appropriate

Abbreviations and Symbols

- All abbreviation should be fully stated in the text where it first appears and abbreviation in parenthesis. Subsequently the abbreviation only may be used
- Use only standard abbreviations; use of nonstandard abbreviations can be confusing to readers
- Avoid abbreviations in the title of the manuscript
- Acronyms should be used sparingly and fully explained when first used

Internet Addiction among Teens and Its Psychological Impacts

Internet addiction which is a type of behavioral addiction is an emerging psychiatric problem related to maladaptive use of networks and social and virtual technologies. In comparison with adults, addiction vulnerability appears to be a more problematic issue among teens. There is a natural tendency for this age group to use the internet and thus easily develop internet addiction behavior.[1]

In the present globalized era, the internet plays a vital role in the daily lives of approximately 40.0% of the world's population, with more than 3 billion internet users reported in 2016. In 2018, it was estimated that around 3.5 billion people had access to the internet and most of them were young adults and adolescents. Almost 4.57 billion people get to use the internet actively as of July 2020, incorporating 59.0% of the world population. So, reports have shown that there is an increased number of active internet users this year (2020) when compared with other years earlier, this may have been influenced by the COVID-19 pandemic as people were regulated at home and off their statutory daily engagements. Despite the advantages of the internet, the recent dramatic increase in internet use has resulted in its pathological use (i.e., internet addiction).[2]

Internet addiction has been defined as the incapability to control the craving for excessive use of the internet, reduction of time spent without access to the internet, intense anxiety and aggression when denied, and continual worsening of social and family life. In other words, internet addiction is defined as an individual's inability to control their use of the internet, which usually leads to feelings of distress and/or has considerable adverse psychological, social, and occupational effects.[2,3] The prevalence of internet addiction varies from 1.6% to 18.0% worldwide and differs according to age, sex, ethnicity, and population. The results of one study indicated that the risk of internet addiction in men is more than women. However, this result is not definitive and needs further study. Moreover, it has been revealed that the prevalence of internet addiction is higher in adolescents and young adults than other age groups.[3]

It is known that addictions activate a combination of sites in the brain associated with pleasure, known together as the "reward center" or "pleasure pathway" of the brain. When activated, dopamine release is increased, along with opiates and other neurochemicals. Over time, the associated receptors may be affected, producing tolerance or the need for increasing stimulation of the reward center to produce a "high" and the subsequent characteristic behavior patterns needed to avoid withdrawal. Internet use may also lead specifically to dopamine release in the nucleus accumbens, one of the reward structures of the brain specifically involved in other addictions.[4]

Internet addiction ruins lives by causing neurological complications, psychological disturbances, and social problems. Research has shown that students with severe internet addiction are likely to be affected by depression. Moreover, the results of various studies indicated that high use of the internet could be associated with anxiety, stress, poor sleep quality, suicidal thoughts and reduced physical activity. These negative effects can influence family relationships, academic performance, and long-term professional goals, and they can have broad and detrimental consequences on society as a whole.[3,4] Real-life relationships are disrupted as a result of excessive use of the Internet. In addition, several studies have shown links between Internet use and personality traits. They have found loneliness, shyness, loss of control, and low self-esteem to be associated with IA. Depression and anxiety appeared to have the most consistent correlation with internet addiction. In addition, obsessive-compulsive symptoms, hostility/aggression, time in the internet, and quarrel with parents are associated with internet addiction. Findings from different studies have shown that, the Internet addicts has higher rates of psychiatric morbidity (65.0%), suicidal ideation in a week (47.0%), lifetime suicidal attempts (23.1%), and suicidal attempt in a year (5.1%). In addition, other consequences of an Internet addiction might include**:** neglect of personal hygiene, poor eating habits, decreased work or

academic performance, headaches, vision problemsetc.[5]

In the last one decade, the Internet has become an integral part of our life. But, internet usage has been found to have a very strong impact on teens, especially it has affected their social life and their relationship with their family. Therefore, developing an education program about the appropriate use of the internet for teens would be advisable in order to increase awareness of the negative effects of excessive use of the internet and its association with psychological health.

Dr. Mohammad Waliul Hasnat Sajib
Assistant Professor
Department of Psychiatry
Shaheed M. Monsur Ali Medical College
Sirajganj

1. Lin MP. Prevalence of Internet Addiction during the COVID-19 Outbreak and Its Risk Factors among Junior High School Students in Taiwan. International journal of environmental research and public health. 2020.17(22), 8547.
2. Olawade DB, Olorunfemi OJ, Wada OZ, Afolalu TD, Enahoro MA. Internet Addiction among University Students during Covid-19 Lockdown: Case Study of Institutions in Nigeria. Journal of education and human development. 2020; 9.
3. Arzani-Birgani A, Zarei J, Favaregh L, Ghanaatiyan E. Internet addiction, mental health, and sleep quality in students of medical sciences, Iran: A cross-sectional study. Journal of education and health promotion. 2021;10: 409.
4. Cash H, Rae CD, Steel AH, Winkler A. Internet Addiction: A Brief Summary of Research and Practice. Current psychiatry reviews. 2012;8(4): 292–298.
5. Kumar M, Mondal A. A study on Internet addiction and its relation to psychopathology and self-esteem among college students. Industrial psychiatry journal. 2018;27(1): 61–66.

ORIGINAL ARTICLE

Vitamin D Status in Diabetic and Non-Diabetic Chronic kidney Disease Patients and Its Relationship with Functional and Biochemical Parameters

Beena Sarker,[1] Newaz Ahmed,[2] Sanjoy Kanta Nath,[3]
Muhammad Anamul Hoque,[4] Rozina Sultana,[5] Salahuddin Feroz[6]

[1] Junior Consultant (Medicine), Sheikh Hasina National Institute of Burn and Plastic Surgery, Dhaka, Bangladesh; [2]Assistant Professor, Department of Cardiology, Sheikh Hasina National Institute of Burn and Plastic Surgery, Dhaka, Bangladesh; [3]Classified Specialist Medicine (Nephrology), Combined Military Hospital, Chattogram, Bangladesh; [4]Consultant, Department of Nephrology, Shaheed Syed Nazrul Islam Medical College Hospital, Kishorgonj, Bangladesh; [5]Assistant Professor, Department of Obstetrics and Gynaecology, Shaheed M. Monsur Ali Medical College, Sirajganj, Bangladesh; [6]Junior Consultant (Nepheology), Sheikh Hasina National Institute of Burn and Plastic Surgery, Dhaka, Bangladesh.

ABSTRACT

Background: Vitamin D deficiency is common both in diabetic and non-diabetic chronic kidney disease (CKD). **Objectives:** The aim of the study was to determine vitamin D [25(OH) D3] level in both diabetic and non-diabetic chronic kidney disease. **Methods:** This cross sectional, comparative study was carried out in a tertiary care hospital from January 2017 to June 2018.Total 122 patients with chronic kidney disease of stage 3,4,5 on conservative management were enrolled and divided into two groups according to the presence of type 2 diabetes mellitus. Serum 25(OH) vitamin D3 was measured and compared with different functional and biochemical parameters in these two groups. **Results:** Both the groups were age and sex matched. Mean vitamin 25(OH) D3 level was 18.01±4.98 ng/ml in diabetic CKD and 21.15±6.50 ng/ml in non-diabetic CKD patients, which was significantly lower (p=0.004) in diabetic group. Total 60.7% patients were vitamin D deficient in diabetic group which was higher than the non-diabetic group (39.3%). Vitamin D deficient patients were older (age 52.05±8.97 vs 43.16±16.27), more hypertensive (97.3% vs 79.2%), with higher BMI (23.81±3.83 vs 22.05±3.78) and more patients were calcium and vitamin D user in vitamin D deficient group (72.9% vs 58.33%) in diabetic CKD than non-diabetic CKD group. **Conclusion:** So, it can be concluded that vitamin D deficiency is more common in diabetic CKD than non-diabetic CKD patients.

Keywords: Vitamin D status, Chronic kidney disease patients, Functional and biochemical parameters.

Article Info: Received: August 07, 2021, Accepted: October 11, 2021, Number of tables: 07, Number of figures:01, Number of reference: 06

INTRODUCTION

Diabetis mellitus (DM) is one of the leading causes of chronic kidney disease. Type 2 diabetes mellitus and chronic kidney disease (CKD) are common diseases worldwide, and their prevalence continues to increase.[1,2] Vitamin D deficiency is also recognized as a worldwide health problem. In addition, hypovitaminosis D has recently been considered as a responsible factor in the onset and progression of DM and CKD. Low vitamin D level has been identified as a risk factor for common cancers, autoimmune disease, hypertension, neurodegenerative disease, depression and infections.[4,5] The kidney appears to be a major target organ for both classical and non classical actions of vitamin D, with the vitamin D receptors being appropriately highly expressed in this site. Vitamin D is essential for normal insulin secretion in response to glucose and also for maintenance of glucose tolerance.[6]

Patients with chronic kidney disease and diabetes mellitus have exceptionally high rate of vitamin D deficiency.[3]

Diabetic nephropathy is one of the commonest causes of chronic kidney disease (CKD) in

Correspondence: Beena Sarker
Mobile: +8801819287740
E-mail: beena.sarker@gmail.com

Bangladesh. Though Bangladesh is a sunny tropical country, the incidence of vitamin D deficiency is common in general people. Vitamin D insufficiency (<40nmol/l) was common in Bangladeshi people (80.0%) regardless of age, lifestyle and clothing in a study performed in Dhaka city.[7] Another study which was done in Bangladesh to assess the vitamin D status in 147 Bangladeshi females of reproductive age group where it was found that over 81.0% of females were below their mean cut off value for vitamin D level (60.5nmol/l).[8]

Vitamin D is a marker of poor nutritional status. Though vitamin D deficiency is a global health problem, a very few studies have attempted to identify the actual population with vitamin D deficiency in diabetic as well as CKD patients in our country. Furthermore, vitamin D supplementation is needed in diabetic CKD patients to restore the adequate level in order to arrest the progression of CKD MBD (metabolic bone disease) and to provide the patients with other non-classical actions of vitamin D.

The aim of the study was to determine the vitamin D status in both diabetic and non diabeticpredialytic stage 3,4,5 CKD patients and to find out the relationship of vitamin D with functional and biochemical parameters in both groups.

MATERIALS & METHODS

This was a cross sectional, comparative study conducted in department of Nephrology, Dhaka Medical College, Dhaka from January 2017 to June 2018. Patients aged above 18 and below 65 years with chronic kidney disease, stage 3,4,5 with or without diabetes who were managed conservatively, attending nephrology OPD and indoor facilities were included. Total 122 patients who were age and sex matched were included purposively in the study and divided in two groups. Group A = 61,CKD stage 3,4,5 (pre dialytic) due to type 2 diabetes mellitus. group B= 61, CKD stage 3,4,5 (pre dialytic) due to other causes. All the study patients were recorded after fulfilling the inclusion criteria. The study procedure and risk-benefit were explained to the patients. After taking informed consent patients were interviewed by the researcher herself. Socio demographic and clinical data including age, sex, occupation, education, marital status were recorded. Clinical examination including fundoscopy was done according to protocol. Their height, weight was recorded and BMI was calculated. Blood sample for 25(OH) D3were collected. Vitamin D assay were done by ELISA in DMCH laboratory. The results of the following biochemical tests were also collected—Hb%, HbA1C, urine routine and microscopic examination (R/M/E), 24 hours urinary total protein (UTP), s. creatinine, s.albumin, s. calcium, phosphate, and iPTH (parathyroid hormone) to find out the correlation with s. 25(OH) D3 level. Statistical analyses were done by using SPSS version 22 for Windows.

RESULTS

Total 122 patients were taken for the study. Where 61 patients were with CKD with type 2 diabetes mellitus labeled as group A and 61 patients with CKD due to other causes were labeled as group B. Results showed that mean age of group A was 50.18±8.46yrs and group B was 48.31±11.61yrs respectively. Significantly more young (<30 yrs) people were present in group B, and middle aged patients were more in group A. Distribution of study subjects in respect of age did not show any statistically significant difference, P= 0. 328. (Table I).Total 38 (62.3%) male and 23 (37.7%) female in Group A. Total 34 (55.7%) male and 27 (44.3%) female in group B. Distribution of the study subjects in respect to sex did not show any statistically significant difference (P=0.462) (Figure I). In group A, 4 (6.6%) patients were severely vitamin D deficient (<10ng/ml) 33 (54.1%) patients were vitamin D deficient (10-20ngml) and 24 (39.3%) patients were insufficient (21-30ng/ml). In group B, 5 (8.2%) patients were severely vitamin D deficient, 19 (31.1%) patients were deficient, 37 (60.7%) patients were insufficient. Mean vitamin D level was significantly lower in group A than group B (P=0.004) (Table II). From this study it was found that older and female patients were significantly more vitamin D deficient, more patients were hypertensive in deficient group, duration of DM and BMI was higher in deficient group, significantly more patients were on calcium and

vitamin D ingestion and diabetic retinopathy were less in deficient group and significantly less numbers of smoker were present in vitamin D deficiency group (Table III). It was also found that in group B, younger and more number of male patients were vitamin D deficient, more patients were hypertensive in deficient group, patients with lower BMI were vitamin D deficient, more number of patients were calcium and vitamin D analogue user in deficiency group, less number of smokers were vitamin D deficient (Table IV). Lower hemoglobin and higher HbA1c was present in vitamin D deficiency group. Vitamin D deficiency was present in patients with higher creatinine level with corresponding lower eGFR and also with higher 24 hrs UTP. Here lower level of albumin, s. calcium and higher level of s. phosphate andiPTH was present in Vitamin D deficient group (Table V). Vitamin D deficiency was common in patients with lower haemoglobin level, with higher 24hrs UTP, higher creatinine value and corresponding lower eGFR. Here lower calcium, higher phosphate and higher iPTH value was present in vitamin D deficient group (Table VI). In group A, vitamin D had significant positive correlation with Hemoglobin level, s.albumin, s.calcium level and eGFR. Vitamin D had significant negative correlation with HbA1c, 24 hours UTP, S. creatinine, s.phosphate and s.iPTH. In group B, vitamin D level had significant positive correlation with Hemoglobin level and eGFR and vitamin D had significant negative correlation with s. calcium, 24 hours UTP, and s. phosphate level (Table VII).

Table I: Distribution of the patients according to age in two groups (n=122)

Variable	Group A (n=61)	Group B (n=61)	P value
Age (years)			
≤30	1 (1.6)	14 (23.0)	
31–40	9 (14.8)	14 (23.0)	
41–50	22 (36.1)	14 (23.0)	
51–60	22 (36.1)	8 (13.1)	
>60	7 (11.5)	11 (18.0)	
Total	61 (100.0)	61 (100.0)	
Mean±SD	50.18 ± 8.46	48.31 ± 11.61	0.328

Results were expressed as number (percentage) and mean ±SD. Unpaired t test was done to calculate the statistical association.

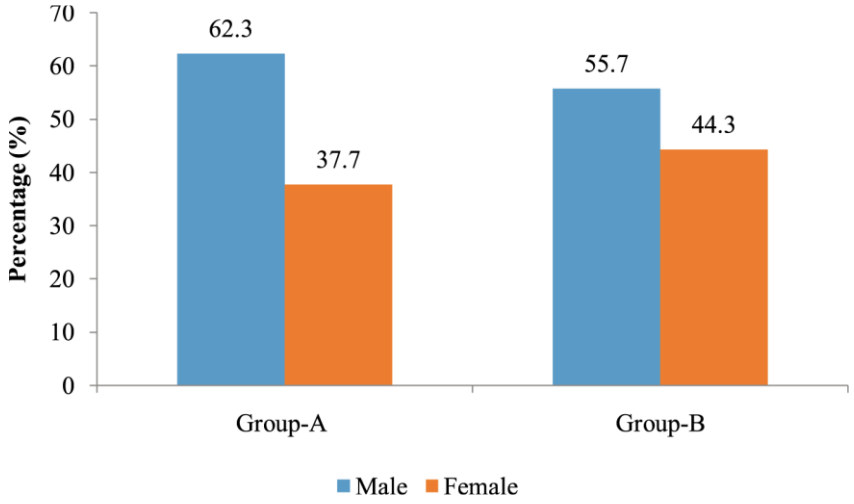


Figure I: Bar Diagram showing sex distribution of the patients in two Groups (n=122)

Table II: Vitamin D [25(OH)D_3] status of the study subjects in both groups (n=122)

Vitamin D Status	Group A (n=61)	Group B (n=61)	P value
Severely Deficient (<10ng/ml)	4 (6.6)	5 (8.2)	
Deficient (10-20ng/ml)	33 (54.1)	19 (31.1)	
Insufficient (21-30ng/ml)	24 (39.3)	37 (60.7)	
Mean±SD	18.00 ± 4.98	21.08 ± 6.39	0.004

Results were expressed as number (percentage) and 25(OH)D_3 levels were expressed as mean ±SD. Unpaired t test was done to calculate the statistical association.

Table III: Relationship of vitamin D level with functional parameters in group A (n=61)

Clinical Variables N=61	Vitamin D Level <20 ng/mL n=37	Vitamin D Level >20 ng/mL n=24	P value
AGE in years	52.05±8.97	47.29±6.79	0.031
Sex (M : F) 38:23	16:21	22:2	<0.001
Duration of Diabetes in years	10.54±4.76	9.58±4.77	0.447
Hypertension	36 (97.3)	23 (95.8)	1.000
BMI in Kg/m2	23.81±3.83	23.52±2.48	0.750
Calcium Vitamin D Analogue intake 38/61.	27(72.9%)	11(45.8%)	0.033
Diabetic Retinopathy 42/61.	25(67.6%)	17(70.8%)	0.788
Smokers 12/61	3(8.1%)	9(37.5%)	0.008

Results were expressed as number (percentage) and mean ±SD. Unpaired t and Chi-square test was done to calculate the statistical association.

Table IV: Relationship of vitamin D level with functional parameters in group B (n=61).

Clinical variables N=61	Vitamin D level <20 ng/mL n=24	Vitamin D level >20 ng/mL n=37	P value
AGE in years	43.16±16.27	44.13±14.43	0.809
Sex (M : F) 41:33	13:11	21:16	0.842
Hypertension	19 (79.2)	27 (73.0)	0.583
BMI in Kg/m^2	22.05±3.78	23.03±2.14	0.199
Calcium Vitamin D Analogue intake 17/61	14 (58.3%)	13 (35.1%)	0.075
Smokers 9/61	2 (8.33%)	7 (18.91%)	0.462

Results were expressed as number/percentage and mean ±SD. Unpaired t test and Chi-square test was done to calculate the statistical association.

Table V: Relationship of vitamin D level with biochemical parameters in group A (n=61)

Variables	Vitamin D status		P value
	<20 ng/mL (n=37)	≥20 ng/mL (n=24)	
Hb (gm/dl)	8.98 ± 1.61	10.26 ± 1.27	<0.001
HbA1c (%)	8.89 ± 2.14	7.68 ± 2.15	0.041
Creatinine (mg/dl)	4.43 ± 1.81	2.14 ± 0.74	<0.001
24hrs UTP (gm/24hrs)	4.13 ± 3.18	2.63 ± 1.48	0.036
eGFR (ml/min/1.73m^2)	17.01 ± 10.23	39.14 ± 13.16	<0.001
Albumin (gm/dl)	2.82 ± 0.74	3.45 ± 0.55	<0.001
Calcium (mg/dl)	8.13 ± 0.81	8.51 ± 0.52	0.003
Corrected Calcium (mg/dl)	8.95 ± 0.86	8.86 ± 0.48	0.477
Phosphate (mg/dl)	4.82 ± 1.18	4.10 ± 1.24	0.001
iPTH (pg/ml)	212.45 ± 153.78	87.73 ± 42.47	<0.001

Results were expressed as mean ±SD.Unpaired t test was done to calculate the statistical association.

Table VI: Relationship of vitamin D level with biochemical parameters in group B (n=61)

Laboratory parameters	Vitamin D status		P value
	<20 ng/mL (n=24)	≥20 ng/mL (n=37)	
Hb (gm/dl)	8.89 ± 1.48	10.08 ± 1.43	<0.001
Creatinine (mg/dl)	5.02 ± 1.96	3.02 ± 1.50	<0.001
24hrs UTP (gm/24hrs)	2.22 ± 1.24	1.62 ± 1.32	0.083
eGFR (ml/min/1.73m^2)	15.47 ± 10.94	26.66 ± 12.19	<0.001
Albumin (gm/dl)	3.23 ± 0.68	3.42 ± 0.69	0.128
Calcium (mg/dl)	7.99 ± 0.93	8.49 ± 0.86	0.003
Corrected Calcium (mg/dl)	8.48 ± 0.97	8.93 ± 0.74	0.005
Phosphate (mg/dl)	5.97 ± 2.49	4.20 ± 1.75	<0.001
iPTH (pg/ml)	212.45 ± 153.78	87.73 ± 42.47	<0.001

Results were expressed as mean ±SD.Unpaired t test was done to calculate the statistical association.

Table VII: Correlation of vitamin D with biochemical parameters in two groups (n=122)

Laboratory parameters	Group A		Group B	
	r value	P value	r value	P value
Hemoglobin	0.543	<0.001	0.361	0.004
HbA1c	-0.303	0.017		
Serum Creatinine	-0.678	<0.001	-0.340	0.007
24h UTP	-0.294	0.021	-0.258	0.044
Serum Albumin	0.432	<0.001	0.230	0.074
Serum Calcium	0.503	<0.001	0.204	0.115
Serum Corrected Calcium	0.238	0.067	0.129	0.322
Serum Phosphate	-0.388	0.002	-0.413	<0.001
PTH	-0.494	<0.001	-0.297	0.020
eGFR	0.696	<0.001	0.346	0.006

Pearson correlation coefficient was done to calculate the correlation of biochemical parameters with Vitamin D level.

DISCUSSION

This study attempted to find out association of clinical and biochemical parameters with vitamin D deficiency in both diabetic and non-diabetic CKD groups. In this study mean age of diabetic CKD patients was 50.18±8.46 which was lower than the other study done in Bangladesh.[9] This may be due to exclusion of patients above 65 years. Mean age of group B is 48.31±11.61 years which is similar to the study done on Bangladesh.[10,11] In both groups, male patients were higher in number (62.3% vs 55.7%) than female pts (37.7% vs 44.3%), which reflects the previous studies,[10] and found to have no significance (P=0.328). Significantly more number of younger patients was in group B than group A (23% vs 1.6%) (P=0.004), and significantly more number of older patients was in group A than group B (36.1% vs 13.1%) (P=0.005), as older people suffered diabetes more than younger age group.

In group A, mean 25(OH) vitamin D3 value is 18.01 ± 4.98 ng/ml and in group B vitamin D level is 21.15 ± 6.50 ng/ml (P= 0.003), so it is found that vitamin D is significantly lower in CKD due to diabetic nephropathy patients, which coincides with the other study.[12,13] Several studies describe that vitamin D deficiency is independently associated with presence of DM. some countries had higher vitamin D level,[14,15] and other countries had lower vitamin D level.[16,17]

In group A, 37 (60.7%) patients were vitamin D deficient and 24 (39.3%) patients have vitamin D insufficiency where 83% diabetic patients with CKD were found to have 25(OH) D3 level <30ng/ml (12), this difference is probably due to inclusion of earlier stages of CKD into this study. In group B, 24 (39.3%) patients were found to be vitamin D deficient <20ng/ml and 37 (60.7%) patients were vitamin D insufficient. This findings matches the result of the study done in USA.[18] S creatinine and decline in eGFR was independently associated with vitamin D deficiency. This study revealed significant negative correlation of Vitamin D level with s. creatinine in both group A and B and positive correlation of vitamin D with eGFR in both groups. There are other studies which demonstrated somewhat controversial relationship with 25(OH) vitamin D level with eGFR and some other studies found no correlation of 25(OH) vitamin $D_3$with eGFR.[17,25]

In group A, significantly older female patients were vitamin D deficient. Vitamin D deficient patients had higher BMI value than insufficient group (23.81 ±3.83 vs 23.54±4.48, P=0.750), had more duration of suffering from diabetes (10.54±4.76 vs 9.58±4.77, P=0.447), 97.3% patients were hypertensive in vitamin D deficient group, more (72.9%) patients were on calcium and vitamin D analogue user in deficiency group than insufficiency group (45.8%). Significantly fewer patients (8.1%) were smokers than insufficient group (37.5%, P=0.008). This findings showed similarity with previous studies.[16] As vitamin D deficiency was common in later stages of CKD, they had more lifestyle restriction which includes quitting smoking and using calcium and vitamin D analogue more.

Contrary to group A, in group B, younger male patients were more vitamin D deficient , more (79.2%) patients were hypertensive in vitamin D deficient group than insufficient group (73.0%) though statistically not significant (P=0.583). Patients with lower BMI had vitamin D deficiency and patients with higher BMI had vitamin D insufficiency. Higher percentage of patients with vitamin D deficiency were using calcium and vitamin D analogue than vitamin D insufficient group and fewer patients were smokers in vitamin D deficient group than insufficient group. Some of the findings matched and some did not match with the studies done before.[16,19] In our country glomerulonephritis is one of the leading causes of CKD, which causes renal impairment in earlier ages.

Anemia is more prevalent in case of vitamin D deficiency states.[20] In this study mean haemoglobin levels were significantly lower in vitamin D deficient group in both diabetic and non-diabetic CKD group. This finding was similar with the other studies where it was predicted that anemia is more common in vitamin D deficient CKD patients.[21,22]

Several studies revealed significant negative correlation with albumin excretion ratio (AER) or increased level of 24 hours urinary total protein excretion in both diabetic nephropathy,[13,23] and also in non-diabetic CKD pts.[14,24] This study revealed 24 hours UTP excretion is significantly higher in diabetic CKD patients than the non-diabetic counterparts. Also, vitamin D deficiency was associated with increased 24 hrs UTP in both group A and B. This study also revealed

significant negative correlation of 25(OH) vitamin D3 with 24 hours UTP in both group A and B patients. So, the study results matched the other studies done previously.

Here low vitamin D level was found with significantly higher S. phosphate in both group A and B and S. iPTH level in both Group A and B and significantly lower levels of S calcium was found in lower 25 (OH) D level in both groups. This finding is similar with the findings found in other studies.[14,25] This study also revealed significant positive correlation of Vitamin D with s. calcium in group A , but in group B, positive correlation of vitamin D with s. calcium but the association was non-significant (r=0.204,P=0.115), which was similar with the previous study.[26]

It is a single center based study. Sample size is relatively small. So, the result may not reflect the overall vitamin D status in Bangladeshi CKD people with or without diabetes.

CONCLUSION

Vitamin D deficiency is common in patients with advanced stages of CKD, this deficiency is more common in diabetic nephropathy than non-diabetic chronic kidney disease. Further large scale study should be carried out to identify the actual vitamin D status in patients of chronic kidney disease with or without diabetes.

REFERENCES

1. Narayan KM, Boyle JP, Geiss LS, Saaddine JB, Thompson TJ. Impact of recent increase in incidence on future diabetes burden: U.S., 2005-2050. Diabetes care. 2006; 29;2114-2116.
2. Ortiz A, Covic A, Fliser D, Fouque D, Goldsmith D, Kanbay M et al. Epidemiology, contributors to, and clinical trials of mortality risk in chronic kidney failure. Lancet. 2014; 383: 1831-1843.
3. Usluogullari CA, Balkan F, Caner S, Ucler R, Kaya C, Ersoy R, Cakir B; The relationship between microvascular complications and vitamin D deficiency in type 2 diabetes mellitus. BMC Endocrine Disorders. 2015; 15:33.
4. Al-Badr W and Martin K: Vitamin D and kidney disease. Clin J Am Soc Nephrol. 2008; 3(5): 1555–1560.
5. Holick MF. High prevalence of vitamin D inadequacy and implications for health. Mayo Clin Proc. 2006; 81: 353-373.
6. Forouhi Ng, Luan J, Cooper A, Boucher Bj, Wareham N: Baseline serum 25-hydroxy vitamin D is predictive of future glycemic status and insulin resistance: the Medical Research Council Ely Prospective Study 1990-2000. Diabetes. 2008; 57: 2619-2625.
7. Islam MZ, Akhtaruzzaman M, Lamberg-Allardt C. Hypovitaminosis D is common in both veiled and nonveiled Bangladeshi women. Asia Pac J Clin Nutr. 2006;15:81-87.
8. Ann Micka, Vitamin D Status among Bangladeshi Women of Reproductive Age. 2009; Masters Thesis 1911- February 2014; 287.
9. Rahim MA, Mitra P,Haque HF, Samdani TS, Zaman S, NazimUddin K; Prevalence of chronic kidney disease stages 3-5 among patients with type 2 diabetes mellitus in Bangladesh;IMC Journal of Medical Science 2017,11(1); 19-24.
10. Fatema A, Abedin Z, Mansur A, Rahaman F, Khatun T, Sumi N et al. Screening for Chronic Kidney Diseases among an Adult Population; Saudi J Kidney Dis Transpl. 2013; 2493):534-541.
11. Hasan MJ, Kashem MA, Rahaman MH, Qudduhush R, Rahaman M, Sharmeen A, Islam N; Prevalence of Chronic Kidney Disease (CKD) and Identification of Associated Risk Factors among rural Population by Mass Screening; Community Based Medical Journal. 2012; 1(1): 20-26.
12. Zhong YL, Yap CW, Vathsala A, How P; Clinical and demographic predictors for vitamin D deficiency inmultiethnic Asian patients with chronic kidney disease, Clin Kidney J. 2012; 5: 303–308.
13. Mohamed MS, Manal M, AbuShady, Sabry MI, Souliman AK, Samya El- Ismaeel ST. Comparison of vitamin D levels in Diabetic nephropathy and Non-diabetic chronic kidney disease , International Journal of Advanced Research. 2014; 2(7): 656-663.
14. Valencia Restrepo CA, Arango J; Vitamin D 25(OH) D in patients with chronic kidney disease 2-5; Columbia Medica. 2016; 47(3): 160-166.
15. Satirapoj B, Limwannata P, Chaiprasert A, Supasyndh O, Choovichian P. Ditamin D insufficiency and deficiency with stages of chronic kidney disease in an Asian Population; BMC Nephrology. 2013; 14:206.

16. Villarreal R, Ortega O, Gallar P, Sánchez M, Callejas R, Gracia C et al. Clinical and biochemical characteristics of predialysis patients in terms of 25 hydroxy vitamin D levels. Nephrologia. 2011; 31(2):185-191.
17. Ishimura E, Nishizawa Y, Inaba M, Matsumato N, Emoto M, Kawagishi T et al., Serum levels of 1,25- dihydroxyvitamin D and 24,25-dihydroxyvitamin D, and 25-hydroxyvitamin D in nondialyzed patients with chronic renal failure; Kidney international. 1999; 55: 1019-1027.
18. Isakova T, Wahl P, Vargas G, Gutierrez OM ,SciallaJ,Xie H et al. FGF23, PTH and Phosphorus Metabolism in the Chronic Renal Insufficiency Cohort, Kidney International. 2011; 79(12): 1370–1378.
19. Zabbar J, Aggarwal PK, Chandel N, Kohli HS, Gupta KL, Sakhuja V, Jha V; High Prevalence of Vitamin D deficiency in North Indian adults is exacerbared in those with chronic kidney disease. Nephrology. 2009; 14: 345-349.
20. Reddy SRK, Addabbo F, Patel TV, Mittal BV, Goligorsky MS, Singh AK. Association of Anemia and Erythropoeisis stimulating agents with inflammatory biomarkers in chronic kidney disease. Kidney International. 2008; 74: 782-790.
21. Patel NM, Gutiérrez OM, Andress DL, Coyne DW, Levin A, Wolf M. Vitamin D deficiency and anemia in early chronic kidney disease. Kidney international. 2010; 77(8): 715-720.
22. Kendrick J, Targher G, Smits G, Chonchol M. 25-Hydroxyvitamin D deficiency and inflammation and their association with hemoglobin levels in chronic kidney disease. American journal of nephrology. 2009; 30(1): 64-72.
23. Xiao X, Wang Y, Hou Y, Han F, Ren J, Hu Z. Vitamin D deficiency and related risk factors in patients with diabetic nephropathy,Journal of International Medical Research. 2016; 44(3): 673–684.
24. Levin A, Barkis GL, Molitch, Smulders M, Tian J, Williams LA, Andress DL. Prevalence of Abnormal serum vitamin D,PTH,calcium, and phosphorus in patients with chronic kidney disease : Results of the study to evaluate early kidney disease. Kidney International. 2007; 71: 31-38.
25. Wang WH, Chen LW, Lee CC, Sun CY, Shyu UC, Hsu HR et al. Association between Parathyroid Hormone, 25 (OH) Vitamin D and Chronic Kidney Disease: A Population-Based Study.Hindawi BioMed Research International. 2017.
26. Echida Y, Mochizuki T, Uchida K, Tsuchiya Nitta K ; Risk factors for vitamin D deficiency in patients with Chronic kidney disease. Internal Medicine. 2012; (51): 845-850.

ORIGINAL ARTICLE

Risk Factors in Children with Cerebral Palsy in A Tertiary Care Hospital

AKM Fazlul Haque,[1] Syed Mohammad Monowar Ali,[2] Kamrun Nahar,[3]
Mithila Rahman Lima,[4] Ummah Habiba Hoque,[5] Mohammad Waliul Hasnat Sajib[6]

[1]Assistant Professor, Department of Pediatrics, Shaheed M. Monssor Ali Medical College, Sirajganj, Bangladesh; [2]Professor, Department of Medicine, Dhaka Medical College Bangladesh; [3]Deputy Project Coordinator, IDD, icddr,b; [4]Medical Officer, Mymenshingh Medical College and Hospital, Mymensingh, Bangladesh; [5]Medical Officer, Rajshahi Medical College and Hospital, Rajshahi, Bangladesh, [6]Assistant Professor, Department of Psychiatry, Shaheed M. Monsur Ali Medical College, Sirajganj, Bangladesh.

ABSTRACT

Background: Cerebral Palsy (CP), a disorder of posture and movement is a common neurodevelopmental disorder that is a burden to family as well as country, but it is largely preventable. **Objectives:** To explore the risk factors associated with development of CP. **Methods**: A case (CP patient aged 2-12 years) control(other than CP patient of same age) study was conducted in and out patient department of pediatrics of Sir Salimullah Medical College and Mitford Hospital over a period from November 2012 to October 2013 on total 240 patient. **Results**: In this study, the mean age of CP was found 3.66±2.4 and 4.1±2.2 years among the cases and controls respectively. CP was more preponderant among male (Case: 52.5%, control: 62.5%). Majority (99, 82.5%) of the cases belonged to low income family. Maternal risk factors like PROM (45.0%), chorioamnionitis (12,1%), preeclampsia(12,1%) and perinatal risk factors like LBW (42.5%), perinatal asphyxia (PNA) (25%) and preterm delivery (22.5%) were presumed to be contributing factor for developing CP. **Conclusion:** In our study, PROM (45%) was the leading risk factors for the development of CP. Studying these risk factors may help to develop an early intervention program for prevention of CP and reduction of morbidity.

Keywords: Cerebral palsy, Risk factors for cerebral palsy, Socio-demographic variables
Article Info: Received: August 09, 2021, Accepted: November 13, 2022, Number of tables: 06, Number of figures: 01, Number of reference: 17

INTRODUCTION

Cerebral Palsy (CP) is a disorder of posture and movement resulting from permanent non progressive insult to developing brain. Average prevalence of CP was 3.6 cases per 1000 (95% CI:3.3-4.0 cases per 1000). Overall the prevalence of CP was 70% higher in low and middle income communities than in high income communities.[1] The vast majority of babies with CP in Bangladesh are born rural areas and 1-2% of all babies are born with some form of CP.[2] Socio demographic characteristics shows that 51.6% children were male and 48.4% were female.[3] Risk factors of CP in EL-Kharga district New Valley revealed that 17.3% had preterm birth, 11.5% LBW and 11.5% had PNA.[4] Maternal infection like Torch (Toxoplasma and others, Rubella, Cytomegalovirus, Herpes simplex virus) infections, fetal or neonatal infections can result in CP.[5] Pre-eclampsia with preterm or LBW or both was associated with an increased risk of CP.[6] Maternal risk factors include intrauterine infection, teratogenic exposures, placental complication, multiple births and maternal conditions such as mental retardation, seizures or hyperthyroidism. Perinatal risk factors are infections, intracranial hemorrhage, seizure, hypoglycemia, hyperbilirubinemia and significant birth asphyxia were associated with development of CP. Postnatal causes include toxic exposure, infectious meningitis, encephalitis, traumatic such as drowning were also contributing for development of CP.[7] The prevalence and risk factors of cerebral palsy has not been studied properly at community level in Bangladesh. CP child needs additional lifetime cost for associated deficit such as mental

Correspondence: AKM Fazlul Haque
Mobile: +8801712128765
E-mail: hdrakmfazlul@gmail.com

retardation, hearing loss and vision impairment etc. In this research, evaluation of risk factors involved in CP was an essential step in developing strategies for prevention of CP and reduce the lifetime cost.

MATERIALS & METHODS

This case control study was carried out from November 2012 to October 2013, A total of 12 months period in the department of pediatrics of Sir Salimullah Medical College and Midford Hospital. All the patients clinically diagnosed as cerebral palsy of 2-12 years, irrespective of sex, who came to in and out patient Department of Pediatrics of Sir Salimullah Medical College and Midford Hospital were included in the study. The protocol was passed through ethical review committee of Sir Salimullah Medical College. Total 240 participants were included as a study population. The sampling technique was purposive. Each and every parent or guardian of the studied children was informed well about the objective of this study and written consent was taken from them. Then, a detailed history was taken by principal investigator himself through interviewing the parents and thorough clinical examination of the patients using well-structured questionnaire. Alongside, detailed history and examination of children with diseases other than CP (like: Typhoid, UTI, Viral hepatitis, Dysentery and Rheumatic fever etc.) was undertaken, considering them as controls. After completion of data collection, data were analyzed and results were compared among the two groups. Data was rechecked, edited and entered in SPSS 16.0 version. Frequency distribution of CP and other illnesses were seen at 5% level of significance. The risk factors associated with the CP was tested by Fisher exact test and Chi-square at 5% level of significance and by Logistic regression analysis.

RESULTS

It was observed that majority 99 (82.5%) patients were belonged to 2-5 years of age in case group, which was 87 (72.5%) in control group. The mean age was found 3.66±2.4 and 4.1±2.2 years among the cases and controls respectively (Table I). Male was predominant both in case (52.5%) and control (62.5%) groups (Table II). More than three forth (77.5%) of the patients father education level was low status among the cases and 84 (70.0%) among controls. Majority 97(80.8%) of the mother education level was low status among the cases and 111 (92.5%) in controls. Majority 99 (82.5%) of the cases belonged to low income family which was 84 (70.0%) among the controls. Number of low income families were significantly higher among the cases than that the controls (Table III). TORCH, chorioamnionitis, PROM and preeclampsia were significantly higher ($p<0.05$) among the cases than those among controls (Table IV). Half of the patients of cases group (50.0%) and almost three querters (72.5%) of controls were delivered at home. Hospital delivery, preterm delivery, perinatal asphyxia and LBW were significantly higher among the cases as compared to controls (Table V). Neonatal jaundice was equally present 3 (2.5%) in both the cases and controls. Meningitis was higher 9 (7.5%) among the cases than the controls(1, 0.8%), the difference is statistically significant ($p<0.05$) (Table VI). Regarding type of CP of the studied patients it was observed that majority 59(49.0%) of cases had spastic quadriplegia, next common types were spastic diplegia 21 (17.0%) and mixed 15 (13.0%), then the others (Figure I).

Table I: Distribution of the studied patients by age (n=240)

Age (in years)	Cases (n=120)		Controls (n=120)		P value
	No.	%	No.	%	
2-5	99	82.5	87	72.5	
6-10	15	12.5	27	22.5	0.122^{ns}
>10	6	5.0	6	5.0	
Mean±SD	3.66±2.4		4.1±2.2		

Table II: Distribution of the studied patients by sex (n=240)

Sex	Cases (n=120)		Controls (n=120)		P value
	No.	%	No.	%	
Male	63	52.5	75	62.5	0.351^{ns}
Female	57	47.5	45	37.5	

Table III: Distribution of the studied patients by socio-economic status (n=240)

Socio-economic status	Cases (n=120)		Controls (n=120)		P value
	No.	%	No.	%	
Father's education					
Low status	93	77.5	84	70.0	[b]0.186[ns]
Middle status	18	15.0	33	27.5	[b]0.017[s]
High status	9	7.5	3	2.5	[a]0.075[ns]
Mother's education					
Low status	97	80.8	111	92.5	[b]0.007[s]
Middle status	20	16.7	6	5.0	[b]0.003[s]
High status	3	2.5	3	2.5	[a]0.658[ns]
Monthly income					
Low income	99	82.5	84	70.0	[b]0.022[s]
Middle income	18	15.0	33	27.5	[b]0.017[s]
Higher income	3	2.5	3	2.5	[a]0.658[ns]
House type					
Kacha	42	35.0	45	37.5	[b]0.687[ns]
Pacca	39	32.5	48	40.0	[b]0.226[ns]
Semi pacca	39	32.5	27	22.5	[b]0.082[ns]
Number of living rooms					
1 Room	48	40.0	57	47.5	[b]0.241[ns]
2 Room	54	45.0	42	35.0	[b]0.113[ns]
3 Room	15	12.5	15	12.5	[b]1.000[ns]
4 Room	3	2.5	3	2.5	[a]0.658[ns]
5 Room	0	0.0	3.0	2.5	[a]0.123[ns]

Table IV: Identified maternal risk factors of the studied patients during intrauterine life (n=240)

Maternal risk factors	Cases (n=120)		Controls (n=120)		OR (95% CI)	P value
	No.	%	No.	%		
TORCH infection						
Yes	7	5.8	1	0.8	7.37 (0.89-161.9)	[a]0.032[s]
No	113	94.2	119	99.2		
Chorioamnionitis						
Yes	12	10.0	2	1.7	6.56 (1.35-43.44)	[a]0.005[s]
No	108	90.0	118	98.3		
PROM						
Yes	54	45.0	27	22.5	2.82 (1.55-5.13)	[b]0.001[s]
No	66	55.0	93	77.5		
APH						
Yes	9	7.5	6	5.0	1.54 (0.84-5.06)	[b]0.423[ns]
No	111	92.5	114	95.0		
Preeclampsia						
Yes	12	10.0	3	2.5	4.33 (1.1-19.92)	[a]0.016[s]
No	108	90.0	117	97.5		
UTI						
Yes	12	10.0	6	5.0	2.11 (0.70-6.57)	[b]0.141[ns]
No	108	90.0	114	95.0		

Table V: Distribution of studied patients by perinatal History (n=240)

Birth history	Cases (n=120)		Controls (n=120)		OR (95% CI)	P value
	No.	%	No.	%		
Place of delivery						
Home	60	50.0	87	72.5	0.38 (0.21-0.67)	[b]0.001[s]
Hospital	60	50.0	33	27.5		
Prolonged labour						
Yes	9	7.5	5	4.2	1.86 (0.55-6.63)	[b]0.270[ns]
No	111	92.5	115	95.8		
Delayed cry (Perinatal asphyxia)						
Yes	30	25.0	16	13.3	2.17 (1.06-4.47)	[b]0.021[s]
No	90	75.0	104	86.7		
Preterm delivery						
Yes	27	22.5	9	7.5	3.58 (1.52-8.67)	[b]0.001[s]
No	93	77.5	111	92.5		
LBW						
Yes	51	42.5	21	17.5	3.48 (1.85-6.6)	[b]0.001[s]
No	69	57.5	99	82.5		
Multiple birth						
Yes	3	2.5	1	0.8	3.05 (0.28-77.24)	[a]0.310[ns]
No	117	97.5	119	99.2		

Table VI: Distribution of studied patients by post natal morbidities as risk factors (n=240)

Post natal morbidities	Cases (n=120)		Controls (n=120)		OR (95% CI)	P value
	No.	%	No.	%		
Neonatal jaundice						
Yes	3	2.5	3	2.5	1.0 (0.16-6.35)	0.658[ns]
No	117	97.5	117	97.5		
Meningitis						
Yes	9	7.5	1	0.8	9.65 (1.22-206.6)	0.009[s]
No	111	92.5	119	99.2		

s= significant, ns= not significant; [a]P value reached from fisher exact test; [b]P value reached from chi square test; P value reached from chi square test from table1, table 2 and fisher exact test.

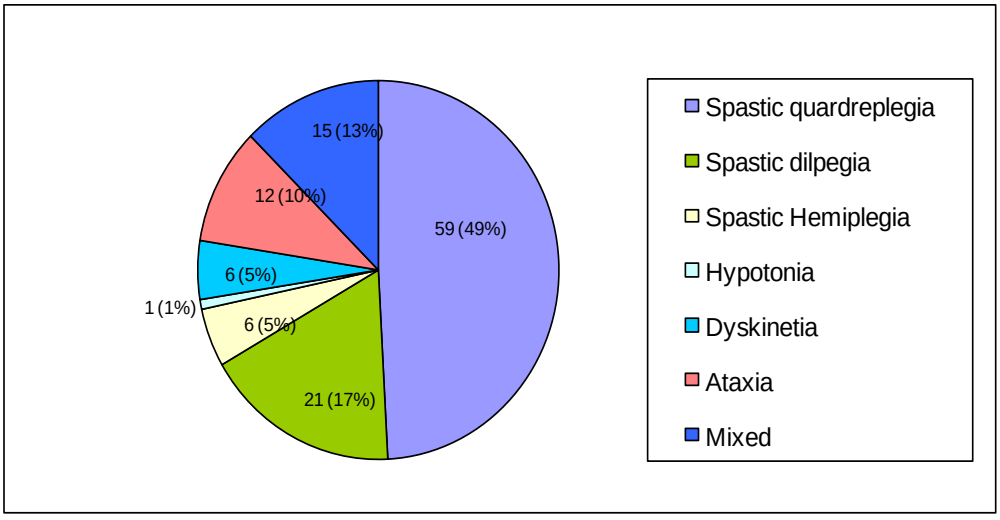


Figure I: Distribution of cases by types of cerebral palsy (n=120)

DISCUSSION

This case-control study was carried out with an aim to explore the risk factors of cerebral palsy among studied children. Majority of the controls had bronchiolitis 15.0% and viral fever 15.0%, followed by febrile convulsion 12.5% and pneumonia 10.0%. The present study findings were discussed and compared with previously published relevant studies. In this series it was observed that the mean age of the cases and controls were 3.66±2.4 and 4.1±2.2 years respectively. Most (82.5%) of the patients belonged to 2-5 year age-group among the cases which was 72.5% in controls. Tabib[3] observed majority (55.9%) of the patients with CP belonged to this (2-5 years) age group. Khan,[8] showed children with CP with a mean age of 3 years 3 months. The above findings are similar with the present study regarding the age of the studied children.

Regarding sex distribution, there was preponderance of male over female in both groups. Actually in our country there is a tendency of male preponderance in any hospitalized childhood illnesses. This may be due to the fact that the male children are more valued and taken care by their parents, so they are brought to hospital more than their female siblings. In this present series it was observed that more than three quarters (77.5%) of the patients' fathers education level was low status among the cases and 70.0% among controls. Majority (80.8%) of the mother education level was low status among the cases and 92.5% in controls. Middle status of fathers education was significantly ($p<0.05$) higher in control group with compared to case group, however middle status of mother's education was significantly ($p<0.05$) higher in case group compared to control group. On the other hand low status of mother's education was higher in control group compared to case group. Deference among the cases and controls were statistically significant ($p<0.05$) in regards to middle status of father's education, low and middle status of mothers education.

In this current series it was observed that most (82.5%) of the cases belonged to low income family which was 70.0% among the controls. Low income family was significantly ($p<0.05$) higher in case group compared to control group. Diffference among the cases and controls were statistically significant ($p<0.05$) in regards to low income family. Singhi and Saini,[9] found that more than two third (68.9%) of children with CP came from lower socio-economic status. In another study, Khan,[8] obtained that 89.0% of rural children in the study came from low-income families, which is consistent with the current study. Schendel[10] reported the evidence of TORCH infections (toxoplasma and others, rubella, cytomegalovirus, and herpes simplex) associated with CP. In the current study it was observed that TORCH infection in pregnancy was found in 5.8% cases and 0.8% in controls, which is significantly ($p<0.05$) higher in case group as compared to control group. In this series chorioamnionitis was found in 10.0% of cases and 1.7% of controls, that is significantly ($p<0.05$) higher in case group as compared to control group. A meta analysis was done by Shatrov,[11] which contained the association between clinical chorioamnionitis and cerebral palsy. Summary estimates from another published meta-analysis done by Schendel,[10] showed that chorioamnionitis is associated with a twofold increased risk of cerebral palsy in preterm and a fivefold increased risk in term babies, which are closely resembled with the current study.

Marcus[5] found that PROM associated with intra-amniotic infection which was the highest risk for developing CP. In this study PROM was found in 45.0% of cases and 22.5% of controls, which is significantly ($p<0.05$) higher in case group as compared to control group. Preeclampsia was found in 10.0% of cases and in 2.5% of controls, which is significantly ($p<0.05$) higher in case group as compared to control group and a subject with Preeclampsia had 4.3 (95% CI 1.1% to 19.92%) times increased risk of developing CP. In a recent study Raeburn,[12] reported that children of mothers with pre-eclampsia is a higher risk of CP (unadjusted OR 2.5, 95% CI 2.0-3.2) than children of mothers did not have the condition which is consistent with the current study.

Polivka,[13] reported that urinary tract infection during pregnancy was found to be a risk factor for development of cerebral palsy. The prevalence of UTI among case mothers was 17.9% compared with 5.2% among control mothers which was closely resembled with the current study.

In this present study it was observed that a half (50.0%) of the cases and 27.5% of controls were

delivered at hospital. Hospital delivery was significantly ($p<0.05$) higher in case group with compared to control group. Over two decades in North India, Singhi and Saini,[9] reported that 81% of CP patients had hospital deliveries, which was higher than that of current study

Prolonged labour was found in 7.5% of cases and in 4.2% controls, which was higher in case group but not significant ($P>0.05$). On the other hand Singhi and Saini,[9] observed prolonged duration of labor was reported in 13.6% of the cases, which is higher than the current study, may be due to the improved awareness regarding the pregnancy and delivery in our country, whereas the above mentioned study was done in last two decades in North India.

Delayed cry (PNA) was found in 25.0% of cases and 13.3% of controls. Delayed cry (PNA) was significantly ($p<0.05$) higher in case group as compared to control group. Tabib,[3] found delayed cry after birth 66.2% in his study. In another study Singhi and Saini,[9] showed delayed cry in 51.2% of the cases, which are higher than that in current study.

In this study preterm delivery was found among 22.5% of cases and 7.5% among controls. Preterm delivery was significantly ($p<0.05$) higher in case group as compared to control group. Singhi and Saini,[9] reported that 24.4% were preterm delivery, which is consistent with the current study. In another study Tabib,[5] showed prematurity 18.9% in their study with CP.

LBW was found in 42.5% of cases and in 17.5% of controls. LBW was significantly ($p<0.05$) higher in case group as compared to control group. Sundrum,[14] found only 6.1% low birth weight in their study. In another study Tabib,[3] showed low birth weight 40.5%, which is comparable with the current study. Andersen,[15] Bhatia, Joseph,[16] and Stanley,[17] mentioned in their study that the risk factors for CP are multifactorial that include preterm birth, low birth weight, and birth asphyxia. Preterm delivery which was comparable with the current study but LBW was higher than previous study probably due to poor antenatal care.

Multiple birth was found in 2.5% of cases and in 0.8% of controls, which was almost similar between two groups. In a recent study Sundrum,[10] found that 3.0% of live births were multiple births, which is similar with the current study. Meningitis was higher (7.5%) among the cases than in controls 0.8%. Meningitis was significantly ($p<0.05$) higher in cases group compared to control group. Singhi and Saini,[9] and Tabib,[5] found 57.4% and 2.7% meningitis respectively in their study patients with CP.

Regarding the type of CP it was observed that most (49.0%) of cases had spastic quadriplegia followed by 17.0% had spastic diplegia, 13.0% mixed, 10.0% ataxic, 5.0% spastic hemiplagia, 5.0% dyskinetia and 0.83% hypotonia. El-Tallawy,[4] showed the order of frequency of different subtypes of CP eg. 65.4% had spastic type, 26.9% mixed type and 3.8% for each ataxic and dyskinetic types of CP. Singhi and Saini,[9] observed types of CP, where spastic 73.0%, dyskinetic/athetoid 7.0%, hypotonic/ataxic 11.2% and mixed 8.8%. Out of spastic CP, quadriplegic was 51.5%, diplegic 34.5% and hemiplegic 13.8%. All the above findings are consistent with the present study findings.

This study has the limitations of undertaking the cross sectional study design which had been carried out on a sample selected by convenient sampling technique from a single center.

CONCLUSION

This study was undertaken to determine the risk factors of cerebral palsy among studied children. Maternal risk factors like TORCH infection, chorioamnionitis, PROM and preeclampsia are also contributing to the development of cerebral palsy. About the birth and postnatal history like delayed cry (PNA), preterm delivery, LBW and meningitis are significantly associated with development of cerebral palsy. More extensive studies are required to evaluate the risk factors and to figure out the measures that can be commenced to improve this situation.

REFERENCES

1. Marshalyn YA, Braun KVN, Doernberg Nancy S, Ruth E. Benedict, Russell S. Kirby, Maureen S. Durkin. Prevalence of Cerebral Palsy in 8-Year-Old Children in Three Areas of the United States in 2002: A Multisite Collaboration. Pediatrics (official journal of the American academy of pediatrics). 2008; 121: 547-554.
2. Annie K. the guardian global development : Bangladeshi children with cerebral palsy given chance of a better future[internet]; Cited 2012 September 14. http:// www. theguardian.com/bangladeshi-children-cerebral palsy-better-future.

3. Tabib SMS. Prevalence of childhood disabilities and cerebral palsy in the community. Institute of Child and Mother Health, Health bulletin. 2009; 6: 16-18.
4. Hamdy N, El-Tallawy, Wafaa MAF, Ghaydaa AS, Nabil AM, Tarek AR, Noha AE. Epidemiology of cerebral palsy in El-Kharga District-New alley (Egypt). Brain and Development (official journal of Japanese society of child neurology). 2010; 10: 1016.
5. Marcus CH, Mary GH. Perinatal Infections and Cerebral Palsy. Clinics in Perinatology. 2006; 33: 315–333.
6. Kristin MS, Runa H, Ann-CI, Rigmor A, Stian L, Guro LA et al. Mediators of the association between pre-eclampsia and cerebral palsy. BMJ. 2013; 347: 4089.
7. Sankar C, Mundku N. Cerebral Palsy–Definition, Classification, Etiology and Early Diagnosis .Indian Journal of Pediatrics. 2005; 72 : 865-868.
8. Khan NZ, Ferdous S, Munir S, Huq S, McConachie H. Mortality of urban and rural young children with cerebral palsy in Bangladesh. Developmental Medicine and Child Neurology. 1998; 40: 749-53.
9. Pratibha S, Gahlot SA. Changes in the Clinical Spectrum of Cerebral Palsy over Two Decades in North India—An Analysis of 1212 Cases. Journal of Tropical Pediatrics. 2013; 10:1093.
10. Schendel DE. Infection in pregnancy and cerebral palsy. Journal of the American Medical Women's Association. 2001; 56:105-108.
11. Shatrov JG, Birch SC, Lam LT, Quinlivan JA, McIntyre S, Mendz GL. Chorioamnionitis and Cerebral palsy: a Meta-analysis. Obstet Gynecol. 2010; 116: 387-392.
12. Raeburn EDV. Pre-eclampsia, Cerebral Palsy Link Explored. Putting Breaking Medical News Into Practice. 2013.
13. Polivka BJRN, Nickel JTRN, Wilkins JR. Urinary Tract Infection During Pregnancy: A Risk Factor for Cerebral Palsy? Journal of Obstetric, Gynecologic, & Neonatal Nursing. 1997; 26: 405–413.
14. Sundrum R, Logan S, Wallace A, Spencer N .Cerebral palsy and socioeconomic status: a retrospective cohort study. Arch Dis Child. 2005; 90:15–18.
15. Andersen GL, Irgens LM, Haagaasa I, Skranes JS, Meberg AE, Vik T. Cerebral palsy in Norway: prevalence, subtypes and severity. Eur J Pediatr Neurol. 2008; 12: 4–13.
16. Bhatia M, Joseph B. Rehabilitation of cerebral palsy in a developing country: the need for comprehensive assessment. Pediatr Rehabil. 2001; 4: 83–86.
17. Stanley F, Blair E, Alberman E. Cerebral Palsies: Epidemiology and Causal Pathways. London: MacKeith Press. 2000.

ORIGINAL ARTICLE

Study on Knowledge Attitude and Practice about Antenatal Care among Women with Reproductive Age in Bangladesh

Muhammad Abdullahil Kafi,[1] Mostafizur Rahman,[2] Afroza Sultana,[3]
Samaunnur Shuvo,[4] Laila Razzaque,[5] Sandwip Talukdar[6]

[1.]Assistant Professor, Department of Forensic Medicine, Shaheed M. Monsur Ali Medical College, Sirajganj, Bangladesh; [2.]Student of MPH Program, Department of Public Health & Life Science, University of South Asia, Bangladesh; [3.]Medical Officer, Sheba General Hospital, Sirajganj, Bangladesh; [4.] Lecturer, Department of Forensic Medicine, Shaheed M. Monsur Ali Medical College, Sirajganj, Bangladesh; [5.]Associate Professor, Department of Anatomy, Shaheed M. Monsur Ali Medical College, Sirajganj, Bangladesh; Assistant Professor, Department of Forensic Medicine, North Bengal Medical College, Sirajganj, Bangladesh.

ABSTRACT

Background: In Bangladesh about 21,000 women are dying every year due to causes relating to pregnancy and child birth. In mid-eighties, Government of Bangladesh integrated Maternal & Child Health (MCH) based family planning (FP) programs. MCH service is sub categorized into antenatal care, intra-natal care and post natal care. Among all these cares, antenatal care (ANC) is the most critical one. **Objectives:** To find out the knowledge, Attitude and Practice of antenatal care by the women of rural community at Sirajganj district in Bangladesh. **Methods:** It was a descriptive cross-sectional study done in Sirajganj district from July 2018 to October 2018. Total 102 women with reproductive age were selected purposively. **Results:** The study was conducted with female age group started from 20 years where around half of the respondents (45.1%) were between 20-25 years. Occupation of almost all of the respondents (97.06%) was housewife. Near to half of the respondent (45.10%)'s Education status was Secondary level. Among 102 of women, more than a half of respondents (54.9%) were with multi gravid. Around two third of the respondents (64.7%) had received ANC in last pregnancy. Most of the respondents (65.15%) had at least 5 ANC checkups throughout her pregnancy. More than two third of the respondents (68.18%) had done blood screening for Hemoglobin diagnosis. Three fourth of the respondents (75.76%) had done blood screening for Sugar level diagnosis and more than three fourth of the respondents (77.27%) had done blood screening for Blood pressure. **Conclusion:** Knowledge, attitude and practices of ANC among women with reproductive age is vary according to the socio-demographic status. Some more effective implementation should need to regular the positive feedback.

Keywords: Knowledge of antenatal care, Practice about antenatal care among women, Reproductive age
Article info: Received: September 17, 2021, Accepted: November 05, 2021, Number of tables: O7, Number of figures: O3, Number of reference: 11

INTRODUCTION

Antenatal care is the care of women during pregnancy. Historically antenatal care began as a social service in Paris in 1788 in two shelter homes for abandoned women. Ever since the concept of prophylactic care during pregnancy has been accepted, the standard of cares is rising in the developed countries.[1] The primary aim of the continued care of women during pregnancy and child birth is to achieve at the end of pregnancy, a healthy mother and a healthy child. Prenatal care is provided to maintain, protect and promote health of the expectant mother and is achieved through, complete physical checkups at regular interval and early detection of deviations from the normal and timely therapy, education of mother about general hygiene, care during pregnancy, nutrition, spacing of the children and child care and providing psychological and social support through patienthearing.[2]

Correspondence: Muhammad Abdullahil Kafi
Mobile: +8801717673505
E-mail: drmahkafi@gmail.com

Bangladesh is a country of 140 million people with 24 million women in reproductive age (15-49 years). About 21,000 women are dying every year due to causes relating to pregnancy and child birth which is one quarter of total death among women of reproductive age. In mid-eighties, Government of Bangladesh integrated MCH based FP programs with the objectives to deliver services in the same package to ensure health of mother and their children and thereby reduce maternal and infant mortality and morbidity. For organizational purpose the MCH service is sub categorized into antenatal care, intra-natal care and post natal care. Among all these cares, antenatal care (ANC) is the most critical one.[3]Antenatal cares is care of women during pregnancies. The main objectives of antenatal cares are to achieve at the end of pregnancy a healthy mother and a healthy child. The Government has been organizing different programs in different parts of the country. But still these goals are not being achieved. So the Government should plan to reduce the maternal mortality rate. This is reflected in the goals and strategy of the health and family planning component in the fifth five year plan. The stated objectives are to reduce maternal mortality from 4.5 in 1995 to 3.2 in 2000.[4]More than half a million (5,29000) women in the world die every year from the cause related to pregnancy and child birth. Global observation shows that in developed regions maternal mortality ratio averages at 13 per 10000 live births, in developing regions the figure is 440 for the same number live birth. Between 11 to 17 percent of maternal death happens as a result of lack of antenatal care itself. According to current estimate, Southeast Asia region accounts for 170000 maternal death annually.[5] In most developing countries, women of reproductive age (15 to 49 years) constitute a little more 1/5th of the total population.[6]

With the views, for the reduction of maternal and perinatal mortality and morbidity in recent years different strategies were developed, such as improvements of antenatal care services, risk approach, training of birth attendant , emergency obstetric care (EOC) and the need for community participation. The strategy is called meeting the community half way.[7] MCH and Family planning are now–a-days an asset of primary health care, which is not a new specialty in these related fields. Our Government was working with millennium Development goals adopted by UN to improve maternal health by reducing maternal mortality three quarters between 1990 and2015.[8]

Although a high progress has been made in MCH in developed countries, there are much to do out for achievement in developing countries like Bangladesh. MCH care is now conceived of as all activities which promote health and prevent or solve social health problems of mother and children, irrespective of whether they are curative, diagnostic, preventive or rehabilitative. So in Bangladesh where morbidity and mortality features are common to developing countries vertical programs with “standard” technical content based on model of developed country could be applied. This would provide a basis for further actions on MCH care intervention programs in Bangladesh.

MATERIALS & METHODS

It was a cross sectional type of descriptive study conducted during the period of 1st July to 31th October 2018 among rural women. The study was carried out in the villages of Soyadhangora, Sirajgonj Sadar Upazilla under Sirajgonj district. Women having at least one child below one year currently residing in the study area constituted the study population. But the resource constrain the sample size will be 102. A non–random purposive sampling technique was adopted to select the respondents from the study population to collect information regarding ANC with the assistance of Health Assistant (HA) & Family welfare Assistant (FWA). Women age between15-49 years willing to participate at the study were selected. An interview schedule (i.e. structured questionnaire with close ended question) was used as the data collection instrument. Interview schedules/guides was English version questionnaire which was translated into Bengali language. The technique of data collection from the respondents was face to face formalinterview. Permission was taken from the Ethical Review Board of University of South Asia. Privacy, confidentiality, and anonymity was maintained. Nature and purpose of the study was explained to the respondent. For assessing, the specific appropriate statistical tests had been used. Descriptive statistics: frequency, percentage, chi-square test was used according to their nature of variables. These statistical tests had been done by using SPSS Version 25. Statistical significance will be accepted when p value < 0.05.

RESULTS

The study was conducted with female age group started from 20 years where around half of the

respondents (45.1%) were between 20-25 years, near to one third of the respondents (30.4%) were between 26-30 years, 17.7% were between 31-35years, only a few (5.9%) respondents are between 36-40 years old and rests only 1.0% respondents are an age group between 41-more (Figure I). Occupation of almost all of the respondents (97.1%) was housewife, 2.0% was Teacher and rest 0.9% respondent was paid job by NGO. (Table I). Near to half of the respondent (45.1%)'s education status was secondary level, next 22.6% was at primary level, 16.7% of respondents were illiterate, 14.7% were at higher secondary level and rests only 0.9% was above graduate or above (Table II). More than a half of respondents (54.9%) were with multi-gravid and rests 45.1% were primi-gravid (Table III). More than half of the respondents (54.6%) received ANC from FWC/MCWC, 19.7% respondent from Community Clinic, 13.6% respondents from General Hospital, 6.1% respondents from private clinic, 3.0% from UHC and rest only 3.0% from Medical college hospital (Table IV). Majority of the respondents (65.2%) had less than three ANC visits during last pregnancy, 18.2% had three visits and rests 16.7% had more than three visits (Figure II). Most of the respondents (65.2%) had at least 5 ANC checkups throughout her pregnancy, 18.2% didn't have and rests 16.7% couldn't say (Table V). The results revealed that more than two third of the respondents (68.2%) had done blood screening for Hemoglobin diagnosis, 9.1% didn't and rest 22.7% didn't know (Table VI). Three fourth of the respondents (75.8%) had done blood screening for Sugar level diagnosis, 9.1% didn't and rest 15.2% didn't know (Table VII). More than three fourth of the respondents (77.3%) had done blood screening for Blood pressure, 6.1% didn't and rest 16.7% didn't know (Figure III).

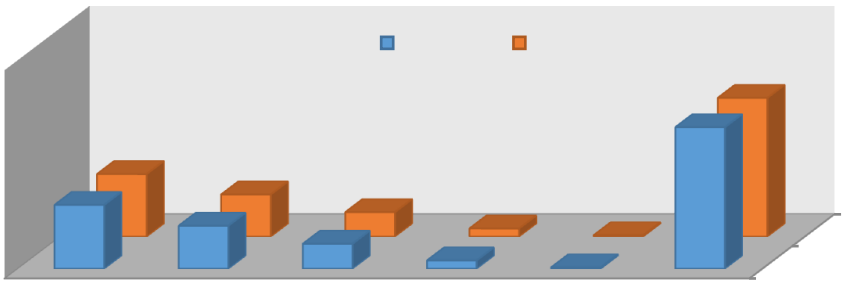


Figure 1: Distribution of age group of the respondents (n=102)

Table I: Distribution of the respondents by occupation (n=102)

Occupation	Frequency	Percentage
Housewife	99	97.1
Paid job by NGO	01	1.0
Teacher	02	1.9
Total	102	100.0

Table-II: Distribution of the respondents by education status (n=102)

Educational status	Frequency	Percentage
Illiterate	17	16.7
Primary	23	22.6
Secondary	46	45.1
Higher Secondary	15	14.7
Graduation and above	1	0.9
Total	102	100.0

Table III: Distribution of the respondents by gravida (n=102)

Gravida	Frequency	Percentage
Primi	46	45.10
Multi	56	54.90
Total	102	100

Table IV: Distribution of the respondents by place of ANC received (n=66)

Place of ANC received	Frequency	Percentage
Community clinic	13	19.7
UHC	2	3.0
FWC/ MCWC	36	54.6
General hospital	9	13.6
Private clinic	4	6.1
Medical college hospital	2	3.0
Total	66	100.0

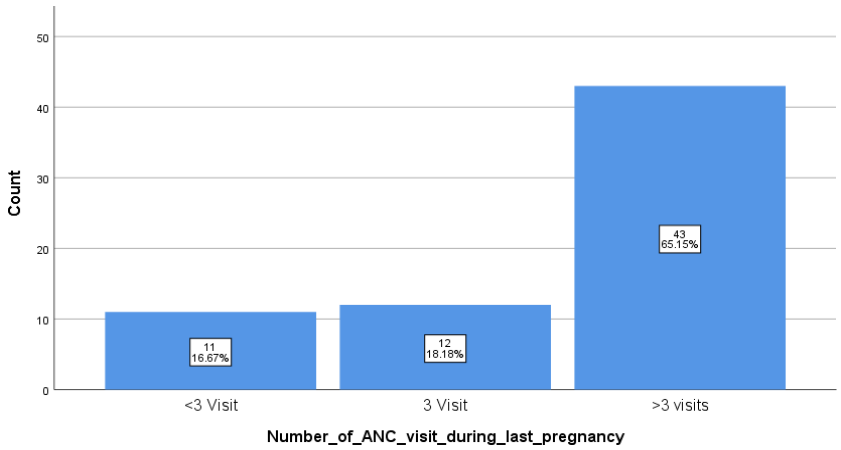


Figure II: Distribution of the respondents by ANC visit during last pregnancy (n=66)

Table-V: Distribution of the respondents by at least 5 ANC checkup throughout her pregnancy (n=66)

At least 5 ANC checkup throughout her pregnancy	Frequency	Percentage
Yes	43	65.2
No	12	18.2
Can't say	11	16.7
Total	66	100.0

Table VI: Distribution of the respondents by Need blood screening for hemoglobin level (n=66)

Blood screening for hemoglobin level	Frequency	Percentage
Yes	45	68.2
No	6	9.1
Don't know	15	22.7
Total	66	100.0

Table-VII: Distribution of the respondents by need blood screening for blood sugar level (N=66)

Blood screening for Blood Sugar level	Frequency	Percentage
Yes	50	75.76
No	6	9.09
Don't know	10	15.15
Total	66	100

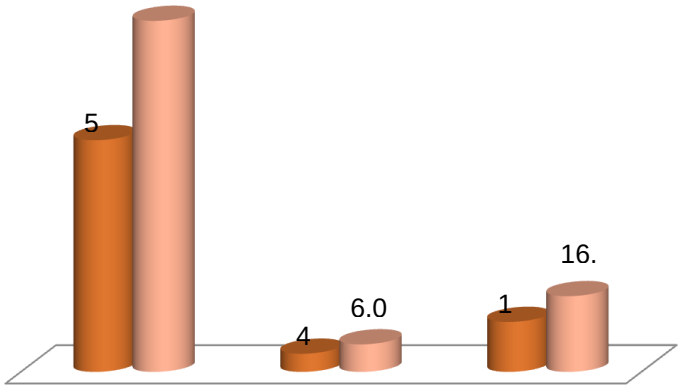


Figure III: Distribution of the respondents by need blood screening for blood pressure (N=66)

DISCUSSION

The descriptive type of cross sectional study was conducted upon 102 females of reproductive age at rural area of Sirajganj district.

The study was conducted with female age group started from 20 years where around half of the respondents (45.1%) were between 20-25 years. Occupation of almost all of the respondents (97.1%) was housewife. Near to half of the respondent (45.1%)'s Education status was Secondary level. In one study done in Ethiopia it was found that, the majority of the respondents (54.9%) were in the age group 25-34 years, followed by 18-24 years (27.5%) with mean age of 29.1 years which was almost similar to our study. Regarding educational background 100 (39.2%) attended primary education and 70 (27.5%) were-illiterate. Regarding occupation most were housewives 70 (27.7%) which was also found in our study.[9]

More than a half of respondents (54.9%) were with multi-gravid and rests 45.1% were primi-gravid. In one study it was found that, majority of women (62.7%) had history of 1-3 pregnancy.[9]

Around two third of the respondents (64.7%) had received ANC in last pregnancy and rest 35.3% had not done so. Majority of the respondents (65.2%) had less than three ANC visits during last pregnancy, 18.18% had three visits and rests 16.7% had more than three visits. Most of the respondents (65.2%) had at least 5 ANC checkups throughout her pregnancy, 18.2% didn't have and rests 16.7% couldn't say. In one study done in Pakistan found that the respondents 69.1% were identified that pregnant women require to go for their checkup. This study revealed that 21.4% participants were agree,71.1% participants were disagreed, 4.4% were neutral that they have Seek antenatal care regularly during pregnancy. 83.1% women believe that antenatal checkup is worthy to monitor mother & fetus' well-being.[10]

Majority (88.2%) of women know about antenatal care and the rest (11.8%) do not know about antenatal care. About 70.6% of the respondents wanted to follow antenatal care and the remaining 29.4% of women do not want to follow antenatal care if they get pregnant due to negative attitude. Less than half (47.9%) of women practiced antenatal care follow up during their pregnancy time.[9]

Another study done in Malyasia revealed that 44.2% of the women have good knowledge regarding antenatal care while 53.8% of them noted to have positive attitude regarding antenatal care.[11]

More than two third of the respondents (68.18%) had done blood screening for Hemoglobin diagnosis, 9.1% didn't and rest 22.7% didn't know. Three fourth of the respondents (75.8%) had done blood screening for Sugar level diagnosis, 9.1% didn't and rest 15.2% didn't know.

More than Three fourth of the respondents (77.3%) had done blood screening for Blood pressure, 6.1% didn't and rest 16.7% didn't know. In one study it was found that, almost half of the women knows 51.5% that high blood pressure can affect the growth of their children.[10]

CONCLUSION

Multiple measures should be taken by Government& Non-Government organizations to inform about the importance of ANC for women with reproductive age. Follow up should be activated more for the receiver who had done incomplete ANC visit. Vast knowledge about importance of ANC will be strengthening to the these communities.

REFERENCES

1. Ministry of Health Malaysia. Family Health Development Division. Perinatal care manual: antenatal care. (2nded).Ministry of Health Malaysia: Putrajaya,2010.
2. Anderson I, Crengle S, Kamaka ML, Chen TH, Palafox N, Pulver LJ. Indigenous health in Australia, NewZealandand the Pacific. Lancet. 2006;367:1775-1785.
3. IslamMR, Odland JO. Determinants of antenatal and postnatal care visits among Indigenous people in Bangladesh: a study of the Mru Community. Rural and remote health. 2011; 11:1672.
4. Rumbold AR, Bailie RS, Si D. Delivery of maternal healthcare in indigenous primary health care services: baseline data for an ongoing quality improvement initiative. BMC Pregnancy and Childbirth. 2011. 11; 16.
5. Department of Reproductive Health and Research World Health Organization: Maternal mortality in 2000: estimates developed by WHO, UNICEF and UNFPA. 2004, Geneva: WHO, UNICEF and UNFPA.
6. UNICEF Eastern and Southern Africa Regional Office: Maternal Mortality Reduction Strategy. 2003.
7. World Health Organization: Indicators to Monitor Maternal Health Goals. Report of a technical Working Group. Geneva: World Health Organization. 1993.
8. National Council for Population and Development: Sessional Paper No. 1 of 2000 on National Population Policy for Sustainable Development. Ministry of Finance and Planning. 2000.
9. Henok A, Worku H, Getachew H, Workiye H. Knowledge, Attitude and Practice of Antenatal Care Service among Married Women of Reproductive Age Group in Mizan Health Center, South West Ethiopia Journal of Medicine, Physiology and Biophysics. 2015; 16: 53.
10. S. Akhtar, Hossain M, Majeed I,Afzal M.Knowledge Attitude and Practice Regarding Antenatal Care among Pregnant Women in Rural Area of Lahore. Int. J. Soc. Sc. Manage. 2018; 5(3):155-162.
11. Muhamad JJ.Knowledge, attitude and practice on antenatal care among orang asli women in jempol.Malaysian Journal of Public Health Medicine. 2011; 11(2): 13-21.

ORIGINAL ARTICLE

Oral Hygiene Practices among High School Students of Bangladesh

Sabrina Razzaque,[1] Nishat Parvin,[2] Samiul Alam,[3]
Laila Razzaque,[4] Shamima Hoque Lia,[5] Muhammad Abdullahil Kafi[6]

[1]Assistant Professor, Department of Dental Pharmacology, Udayan Dental College, Rajshahi; [2]Associate Professor, Department of Dentistry, Shaheed M. Monsur Ali Medical College, Sirajganj; [3]Junior consultant, Department of Anasthesia, Rajshahi Medical College, Rajshahi; [4]Assistant Professor and Head, Department of Anatomy, Shaheed M. Monsur Ali Medical College, Sirajganj; [5]Assistant Professor, Department of Anatomy, Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh; [6]Assistant Professor, Department of Forensic Medicine, Shaheed M. Monsur Ali Medical College, Sirajganj, Bangladesh.

ABSTRACT

Background: Good oral hygiene practices ensure that your teeth stay healthy and so you can avoid problems with your teeth and gum tissue. **Objectives:** To assess the oral health behaviour and status among high school students. **Methods:** The cross sectional study was conducted from January to December 2014 in one high school of Mirpur-2, Dhaka; a total of 300 samples were selected by purposive sampling technique. All high school students who gave assent and consent taken from school authority and willing to comply with the study procedure was included. Data were collected by interviewer administered semi structured questionnaire and check list was filled in after oral examination. **Results:** Out of 300 respondents 144 (48.0%) belonged to less than 13 years ago group and 156 (52.0%) were from 14 years and above age group. The highest number 105 (35.0%) respondents' parents completed honors education and 7 (2.0%) respondents' parents had no academic education. and 197 (65.7%) respondents belonged to middle (21000-40000) income group and 13(4.3%) respondents belonged to highest (>40000 tk). The highest 290 (96.7%) respondents cleaned teeth regularly and lowest 10 (3.3%) avoided the job respectively and the highest number of respondents cleaning teeth vertically and lowest number of respondents cleaning teeth 2-4 times at the base of the teeth. Horizontally and others techniques were used by 68 (22.7%) and 20 (6.7%) respondents respectively and 275 (91.7%) respondents used toothpaste for cleaning teeth. **Conclusion:** It is concluded that educational level and monthly income of parents, teeth cleaning frequency and method can ensure better oral health care and hygiene practice and better oral health status.

Keywords: Oral health behaviour, Educational level of parents, cleaning teeth vertically and horizontally

Article info: Received: September 06, 2021, Accepted: November 23, 2021, Number of tables: 06, Number of figures: 01, Number of reference: 11

INTRODUCTION

Bangladeshi society has changed rapidly during the past decade. In this era of rapid urbanization on account of unsatisfactory dietary habits and poor oral hygiene measure, the school children are at greater risk of developing dental caries. Oral cavity is a portal of entry and the site of diseases for microbial infections can affect overall health. According to WHO, Oral health is fundamental to general health and well-being. Children who suffer from poor oral health are 12 times more likely to have restricted-activity days than those who do not. More than 50 million school hours are lost annually because of oral health problems which affect children's performance at school and success in later life.[1] Oral diseases restrict activities at school, at work and at home causing millions of school and work hours to be lost each year throughout the world.[2] Oral health care coverage is low in low- and middle- income countries. About 90.0% of school

Correspondence: Dr. Sabrina Razzaque
Mobile: +8801778359371
E-mail: laila26779@gmail.com

children worldwide and most adults have experienced caries, with the disease being most prevalent in Asian and Latin American countries. In Bangladesh more than 80 percent of the populations have at least one or more oral and dental diseases. The people of rural areas are comparatively much ignorant regarding their oral hygiene. Most parents in Bangladesh usually do not give proper attention to the care and conservative treatment of teeth.

Oral disease can be considered a public health problem due to its high prevalence and significant social impact. To minimize these negative impacts of chronic oral disease, there is thus a clear need to reduce harmful oral health habits. Such a reduction can be achieved through appropriate health education programmes.[3] Studies have showed that appropriate oral health education can help to cultivate healthy oral health practice. The change to healthy attitude and practice can be done by given adequate information, motivation and practice.[4] The high cost of dental treatment can be avoided by effective prevention and health promotion measures.[5]

National oral health behavior data are needed for national planning and evaluation of health promotion programs and systematic analysis of oral health behavior may help the specification of oral health messages as well as development of behavior modification strategies. As there is no population-based data available, this study attempts to fill in the knowledge gaps towards designing a preventive oral health intervention program at primary healthcare level.

MATERIALS & METHODS

The cross sectional study was conducted from January to December 2014 in one high school of Mirpur-2, Dhaka. A total of 300 samples were selected by purposive sampling technique. The study population comprised of the class six to class ten high school students in that selected school in Dhaka. Data were collected by face to face interview with interviewer administered semi structured questionnaire and check list was filled in after oral examination. All high school students who gave assent and consent taken from school authority and willing to comply with the study procedure was included. Collected data were cleaned, edited and analyzed with the help of software SPSS window version 20.

RESULTS

Out of 300 respondents 144 (48.0%) belonged to less than 13 years age group and 156 (52.0%) were from 14 years and above age group. Fifty two percent respondents were female and 48.0% respondents were male. The study showed that the highest number 105 (35.0%) respondents' parents completed honors education and 7 (2.0%) respondents' parents had no academic education (Table I). Regarding economic status, 197(65.7%) respondents belonged to middle (21000-40000) income group and 13(4.3%) respondents belonged to highest (>40000 tk) (Table II). It was showed that highest 290 (96.7%) respondents cleaned teeth regularly and lowest 10 (3.3%) avoided the job respectively (Table III). The highest number of respondents cleaning teeth vertically and lowest number of respondents cleaning teeth 2-4times at the base of the teeth. Horizontally and others techniques were used by 68 (22.7%) and 20 (6.7%) respondents respectively (Table IV). It was found that 275 (91.7%) respondents used toothpaste for cleaning teeth (Table V). Majority of the respondents (96.3%) used toothbrush for cleaning teeth, 3 (1.0%) used meswak, 6 (2.0%) used finger and others used 2 (0.7%) respondents respectively (Table VI). The study also showed that 93 (31.0%) respondents used dental floss and 207 (69.0%) didn't used dental floss for cleaning teeth (Figure I).

Table I: Educational qualifications of the respondents' parents (n=300)

Education level	Frequency	Percentage
No education	7	2.3
Primary	33	11.0
Secondary	29	9.7
SSC	30	10.0
HSC	81	27.0
Honors	105	35.0
Above honors	15	5.0
Total	300	100.0

Table II: Distribution of respondents according to monthly income of parents (n=300)

Income range	Frequency	Percentage
10000-20000 tk	90	30.0
21000- 40000 tk	197	65.7
41000 +	13	4.3
Total	300	100.0

Table III: Distribution of the respondents by regularity of cleaning teeth habit (n=300)

Regularity of teeth cleaning habit	Frequency	Percentage
Yes	290	96.67
No	10	3.33
Total	300	100.0

Table IV: Distribution of the respondents by teeth cleaning techniques (n=300)

Techniques used for cleaning teeth	Frequency	Percentage
Vertical technique	200	66.7
Horizontally	68	22.7
2-4 times at the base of teeth	12	4.0
Other techniques	20	6.7
Total	300	100.0

Table V: Distribution of the respondents by teeth cleaning materials (n=300)

Materials used	Frequency	Percentage
Toothpaste	275	91.7
Toothpowder	25	8.3
Total	300	100.0

Table VI: Distribution of the respondents by teeth cleaning instruments (n=300)

Instruments used	Frequency	Percentage
Toothbrush	289	96.3
Meswak	3	1.0
Finger	6	2.0
Others	2	0.7
Total	300	100.0

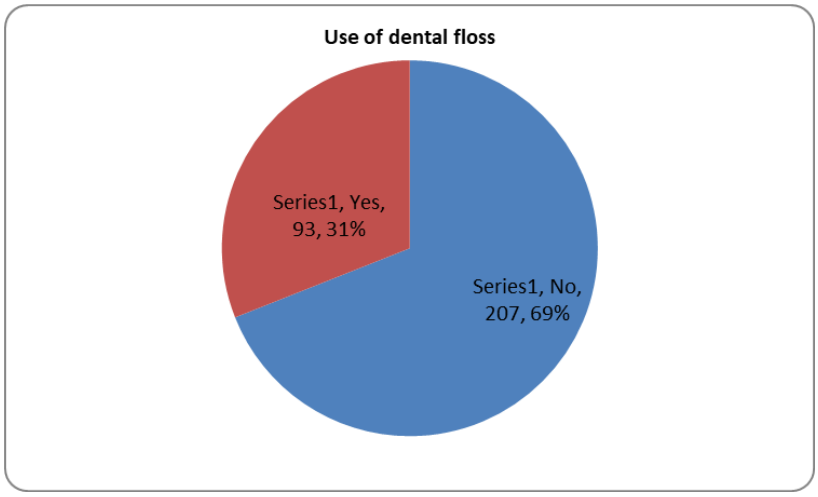


Figure I: Distribution of the respondents by using of dental floss/thread for teeth cleaning (n=300)

DISCUSSION

This cross sectional study was conducted in an urban high school in Dhaka among 300 respondents, 48.0% belonged to less than 13 years age group and 52.0% were from 14 years and above age group. Study on educational qualification of parents showed that Primary, Secondary, S.S.C, H.S.C and above honors level education group were represented by 11.0%, 9.7%, 10.0%, 27.0% and 5.0% respondent respectively. Total 65.7% of the respondents belonged to middle income group and 4.3% respondents belonged to highest income group. In a study Bhuiyan et al, 2020, reported that 40.0% children belonged to households where the head of the family had gone to primary school, 33.0% had attended secondary school, and 18% completed higher secondary school education and above.[6] The rest of the parents/ caretakers were illiterate or had received a home-based education.

In this study it is found that 96.7% had regularity of teeth cleaning habit and no regularity in 3.3%. According to Bhuiyan et al, 2020, around 83.0% students brushed once daily and only 17% brushed twice a day.[6] Most children brushed in the morning, before or after their first meal, while only 8.0% brushed at night as well before bedtime. Smyth et al, 2007 described that 62.0% reported that they had brushed their teeth that day, 26.0% in previous day, and 6.4% more than 2 days previously.[7] Muttappillymyalil J et al, 2009 found that 75.0% respondents claimed to brush their teeth twice a day of interview. We have found that respondents of our study had better hygiene practice than other study groups.[8]

Among respondents 66.7% respondents cleaning teeth vertically and lowest 4.0% respondents were 2-4times at the base of the teeth. Horizontally and others techniques were used by 22.7% and 6.7% respondents respectively. Zhu et al, 2003 observed that Chinese people have tended to practice an unsystematic or horizontal method of brushing.[9] In order to encourage the Chinese population to adopt proper oral hygiene habits, the vertical,

rolling or Bass-methods were considered most appropriate by the LTD program. The survey indicated that only half of the respondents performed the recommended methods of brushing. In our study most of the participants practice tried to follow recommended practice but a large proportion weren't following recommended practice of brushing which contributed variable outcomes of oral hygiene. Bhuiyan et al, 2020 reported that among 150 participants almost 73.0% of the students brushed their teeth using horizontal strokes.[6] Among those who used a toothbrush, only five (3.3%) reported using a soft bristled toothbrush and 92 (61.3%) students do not know what bristled toothbrush they should use.

We found that 91.7% respondents used toothpaste for cleaning teeth and 8.3% used toothpowder respectively. It was revealed that 96.3% respondents used toothbrush for cleaning teeth, 1% used meswak, 2.0% used finger and others used by 0.7% respondents respectively. Muttappillymyalil et al, 2009, found that tooth paste is used by more than 80.0% of the respondents.[8] The other means used were burnt husk of paddy (7.4%), which is the by product of rice milling and burnt for the purpose of cleaning teeth, Ayurvedic tooth powder (6.6%), which is a locally available herbal product in Kerala, India and 3.5% used non specific materials. Sarwar et al, 2012 was conducted a cross sectional descriptive study at four-selected primary school at Fultola and Juri Upazilla of Moulovi Bazar District.[10] Among 250 children aged 5–15 years, Majority of the students (40.4%) used ash and followed by tooth powder 29.2%, tooth paste (12.0%) and charcoal (11.2%). In the rural area it was found that most of the students were habituated regarding cleaning of oral cavity in the morning (76.8%) and twice per day (23.2%). Majority (62.4%) of them not use toothbrush. Bhuiyan et al, 2020 studied among 150 participants of Primary School Children in Rural Bangladesh, showed 81% children interviewed used a tooth brush and tooth paste to clean their teeth; 15.0% used their finger or neem stick (aka meshwak) and charcoal, ash and salt.[6] It is a single center based study. Sample size is relatively small. So, the result may not reflect the overall oral hygiene practices among high school students of Bangladesh**.**

CONCLUSION

The present study indicates that participants were mainly from lower socioeconomic status and parent's education is mainly limited to high school education. More than half of the students brushed their teeth twice daily. Majority used toothpaste and toothbrush. Majority of the respondents brushing teeth more than two minutes.

REFERENCES

1. Kwan SYL, Petersen PE, Pine CM, Borruta A. Health-promoting school: an opportunity for oral health promotion. Bulletin of The World Health Organization. 2005; 83(9).
2. Petersen PE, Bourgeois D, Ogawa H, Day SE, Ndiaye C. The global burden of oral diseases and risks to oral health, Bulletin of the World Health Organization. 2005; 83(9).
3. Smyth E, Caamano F, Riveiro PF. Oral health knowledge, attitudes and practice in 12-year-old school children.Med Oral Patol Oral Cir Bucal. 2007; 12(8): 614-20
4. Lian CW, Phingb TS, Chata CS, Shina BC. Oral health knowledge, attitude and practice among secondary school students in Kuching, Sarawak, Archives of Orofacial Sciences. 2010; 5(1): 916.
5. Oral health Fact sheet N0318. April 2012. Available from –http:// www.who.intmedia centre / factsheets / fs318 / en / .Accessed - 21/8/2012, 11.30am.
6. Bhuiyan MAA, HB, Anwar RB, Ali MN, Agrawal P. Oral Hygiene Awareness and Practices among a Sample of Primary School Children in Rural Bangladesh. Dental Journal (Basel). 2020; 8(2): 36
7. Smyth E, Caamano F, Riveiro PF. Oral health knowledge, attitudes and practice in 12-year-old school children.Med Oral Patol Oral Cir Bucal. 2007; 12(8): 614-20.
8. Muttappillymyalil J, Divakaran B, Sreedharan J. Oral Health behaviour among adolescents in Kerala, India. 2009; 6: 218-24.
9. Zhu L, Petersen PE, Wang HY, Bian JY, Zhang BX. Oral health knowledge, attitudes and behavior of children and adolescents in china. Int Dent J. 2003; 53(5): 289-98.
10. Sarwar AFM, Kabir MH, Rahman AFMM, Haque A, Kasem MA, Ahmad SA et al. Oral hygiene practice among the primary school children in selected rural areas of Bangladesh. J. Dhaka National Med. Call. Hos. 2011; 18(01): 43-48.

ORIGINAL ARTICLE

Comparison of Back Muscle and Leg Muscle Strength between Rickshaw-pullers and Sedentary Workers Residing at the Northern Part of Dhaka Metropolitan City

Shamima Hoque Lia,[1] Shamim Ara,[2] Samina Azad,[3] Md. Mohibul Hasan Khan,[4] Md. Rabiul Islam,[5] Laila Razzaque,[6]

[1]Assistant Professor, Department of Anatomy, Shaheed Ziaur Rahman Medical College, Bogura; [2]Professor and Head, Department of Anatomy, Holy Family Medical College,Dhaka; [3]Assistant Professor, Department of Anatomy, Khulna Medical College, Khulna; [4]Assistant Professor (CC), Department of Anatomy, Khulna Medical College, Khulna; [5]Assistant Professor, Department of Orthopaedics, Shaheed Ziaur Rahman Medical College, Bogura; [6]Assistant Professor and Head, Department of Anatomy, Shaheed M. Monsur Ali Medical College, Sirajganj, Bangladesh.

ABSTRACT

Background: Strength is the quality or state of being physically strong and the ability to resist being moved or broken by a force. Muscular strength is a component of both health-related and sport-related physical fitness. **Objectives:** The present study aimed at comparing the back muscle and leg muscle strength between the rickshaw-pullers of Northern Dhaka and sedentary workers of same region. **Methods:** A cross-sectional analytical type of study was conducted in the department of Anatomy, Dhaka Medical College, Dhaka, from January 2015 to December 2015. The study was conducted on 100 adult Bangladeshi male sedentary workers (Group A) and 100 adult Bangladeshi male rickshaw-pullers (groupB) bothwere residing at the Northern part of Dhaka metropolitan city. **Results:** Mean back muscle strength was 121.02±2.36 kg and 146.29±2.62 kg in group A and group B respectively. Mean leg muscle strength was 38.46±2.33 kg and 49.20±3.59 kg in group A and group B respectively. Significant difference of mean back and leg muscle strength were observed between the groups where the mean back and leg muscle strength were greater in group B than in group A. **Conclusion:** The study findings suggest that work load have influence over back muscle and leg muscle strength. The result might be used as a base-line for other professions as well for further research in our country.

Key words: Back muscle and leg muscle strength, Rickshaw-puller, Sedentary workers

Article Info: Received: August 05, 2021, Accepted: November 09, 2021, Number of tables: 02, Number of figures: 03, Number of reference: 14

INTRODUCTION

Strength is the quality or state of being physically strong and the ability to resist being moved or broken by a force.[1] Muscular strength is a component of both health-related and sport-related physical fitness. It is defined as the ability of a muscle group to develop maximal contractile force against a resistance in a single contraction and is either static or isometric, which involves no change in muscle length, and dynamic, which in volves either eccentric or concentric action. A normal level of strength is necessary for normal healthy living, while muscle weakness might impair normal functional movement.[2] Strength of muscle can be obtainable after certain period, it depends on types of physical activities e.g. water polo players need at least 3 years strength training to get their desired strength, judo athletes need at least 7 years strength training to get their desired strength.[3,4]

Back muscle strength is the ability of a muscle or muscle groups of back to exert force to overcome the most resistance in one effort. The muscles of the back may be divided into three groups: the superficial, intermediate muscles which are extrinsic muscles and the deep muscles or postvertebral muscles belonging to the vertebral column.[5] The shortest and deepest muscle fibers run between the spines and between the transverse processes of adjacent vertebrae.[6]

Correspondence: Dr. Shamima Hoque Lia
Mobile: +8801829143783
E-mail: shamima.hoque.lia@gmail.com

The back extensors are essential to lifting and bending activities. These muscles act both to extend the spine and to balance the flexion movement produced by the trunk and weight being lifted.[7] Assessment of back strength is one of the important preventive measures for sports persons.[8] In other professionals such as rickshaw-puller whose work depend upon back muscle and leg muscle strength.

Leg muscle strength is the ability of a muscle or muscle group of leg to exert force to overcome the most resistance in one effort. The primary function of the lower limbs are to support the weight of the body and to provide a stable foundation in standing, walking on the upgrade and downgrade with and without a load, jumping, climbing and running; they have become specialized for locomotion.[6] Wrestlers, weightlifters and judokas possesses significant difference in leg strength which is probably due to the different nature of training and pre-requisite components.[1]

Rickshaw pulling is labouring task which requires lot of energy, strength and stamina. For their livelihood most of the rickshaw-pullers in Bangladesh start rickshaw pulling at an earlier stage of their life. The skill is developed gradually. Lower limb bones get completely ossified usually by the age of 18 to 23 years. Nearly all bones of body are completely ossified by 25 years of age. So, the lower limb achieves its adult and fixed measurements by 25 years of age.[9] A person should have at least 3 years strength training to get his desired strength.[3] Therefore, continuous 3 years rickshaw-pulling was one of the prerequisites for the rickshaw-pullers. Again remarkable changes with aging process take place after 50 years of age. Loss of muscle strength are reported for individuals older than 50 years.[10] Hence the present study was conducted in individual of 28-50 years of age.

Enhanced muscular strength can lead to improvement in quality of life by increasing the areas of performance, injury prevention and body composition. Good muscle strength in the back and legs, maintain the vertebral column in proper alignment and help prevent low-back pain, maintain good balance. Enhanced back muscle strength can aid in the prevention and treatment of low back pain in modern industrialized societies. It is observed by reviewing existing literature that many works have been done on muscle strength in foreign countries. We need our own standard baseline data from which we can compare muscle strength in our own population for future research.

MATERIALS & METHODS

This was a cross sectional analytical study that was done from January 2015 to December 2015 which comprised between rickshaw-pullers and sedentary workers among adult Bangladeshi male of 28-50 years of age residing at the Northern part of Dhaka metropolitan city. The sample size of the study was 200 adult male comprising 100 adults was Sedentary workers (Group A) and 100 was Rickshaw-pullers (Group B). Participants of sedentary workers included 42 security guards and 58 grocery retailers. Depending on working experience of the Rickshaw-pullers Group B was further subdivided into Group B_1 (5-10 years) of 58 samples and B_2 (11-16 years) of 42 samples. Subjects were selected purposively according to their availability and willingness. They participated in the study neither for payment nor for any other kind of reward. None of their weaknesses were exploited, nor was any undue pressure created to make them participate in the study. Information of both the sedentary worker and the rickshaw-puller were obtained directly by questionnaire and by physical observation as far as possible. Their ages were determined by the national ID cards. Each participant was given an ID number so that repetition could not take place. At the beginning of the study, being greeted politely, each subject was informed about the total plan, implication of the study. Written consent was taken from them without exploiting any of their weaknesses or without creating any undue pressure. They enjoyed the freedom to withdraw themselves from any part of the study. Procedure of measurement of back muscle and leg muscle strength: by back muscle and leg muscle strength dynamometer.[11]

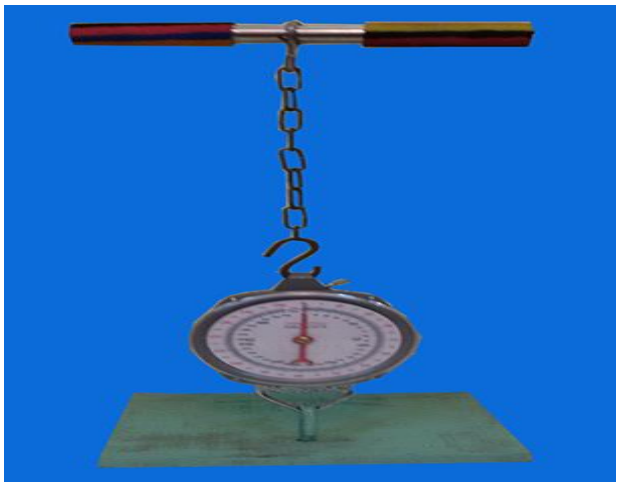
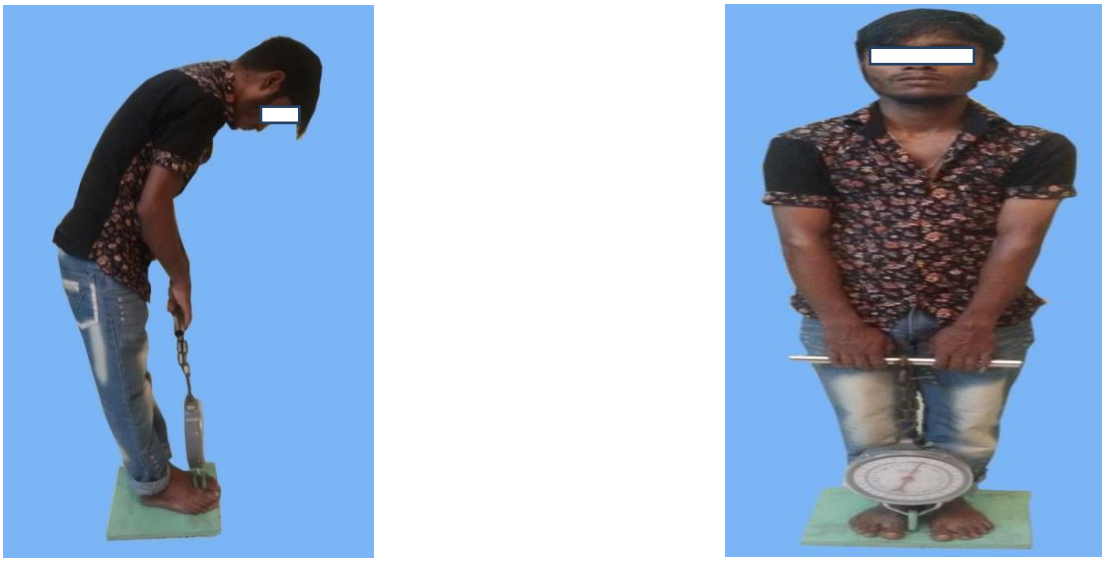


Figure I: Dynamometer

After 3 minutes of independent warm-up time, the subject was positioned with body erect and knee bent so that the grasping hand rests at about 5-7 cm above the knee. Then he was asked to lift the handle of the dynamometer by straightening the knee. He was also asked to incline his body forward at an angle of 60 degrees. Then the strength of the back muscle was recorded on the dynamometer in kg. The measurement of back muscle strength test was taken at three trial. Each back strength testing was recorded at one minute intervals.



IIa: Lateral view **IIb: Anterior view**

Figure IIa, IIb: Back muscle strength test (Lateral & Anterior view)

The subject was asked to stand erect with knee bent so that the grasping hand rests at about 5-7 cm above the knee. Then he was asked to lift the handle of the dynamometer and then straightened the leg. Then the strength of the leg muscle was recorded on the dynamometer in kg. The measurement of leg muscle strength test was taken at three trial. Each leg strength testing was recorded at one minute intervals.

3a: Lateral view **3b: Anterior view**

Figure 3a, 3b: Leg muscle strength test (Lateral &Anterior view)

All data were checked and edited after collection. Later the data were put into computer and were analyzed with the help of SPSS version 19.0 for windows. Statistical analyses were done by unpaired Student's -'t' test.

RESULTS

The present study was conducted on 100 adult Bangladeshi male sedentary workers (group A) and 100 adult Bangladeshi male rickshaw-pullers (group B) both the groups were residing at the Northern part of Dhaka Metropolitan City.

Results showed that mean back muscle strength was 121.02±2.36 kg and 146.29±2.62 kg in group A and group B respectively. The back muscle strength was ranged from 118.00 kg to 126.00 kg in group A and 140.00 kg to 152.50 kg in group B. There was significant difference ($P<0.0001$) of mean back muscle strength was observed between group A and group B where mean back muscle strength was greater in group B than that of group A. Mean leg muscle strength was 38.46±2.33 kg and 49.20±3.59 kg in group A and group B respectively. The leg muscle strength was ranged from 34.50 kg to 43.50 kg in group A and 44.00 kg to 58.00 kg in group B. There was significant difference ($P<0.0001$) of mean leg muscle strength was observed between group A and group B where mean leg muscle strength was greater in group B than that of group A (Table I). It was also found that mean back muscle strength was 144.65±1.73 kg and 148.54±1.87 kg in group B_1 and group B_2 respectively. The back muscle strength was ranged from 141.00 kg to 146.00 kg in group B_1 and 147.00 kg to 152.50 kg in group B_2. There was significant difference ($P<0.0001$) of mean back muscle strength was observed between B_1 and group B_2 where mean back muscle strength was greater in group B_2 than that of B_1.Mean leg muscle strength was 46.53±1.46 kg and 52.88±2.06 kg in group B_1 and group B_2 respectively. The leg muscle strength was ranged from 44 kg to 49.00 kg in group B_1 and 50.00 kg to 57.00 kg in group B_2. There was significant difference ($P<0.0001$) of mean leg muscle strength was observed between group B_1 and group B_2 where mean leg muscle strength was greater in group B_2 than that of group B_1 (Table II).

Table I: Comparison of back and leg muscle strength between group A (sedentary worker) and group B (rickshaw-puller) (n=200)

Group	Strength in kg Back muscle (Mean ± SD)	Leg muscle (Mean ± SD)
A (Sedentary worker) (n=100)	121.02 ± 2.36 (118.00 - 126.00)	38.46 ± 2.33 (34.50 - 43.50)
B (Rickshaw puller) (n=100)	146.29 ± 2.62 (140.00 - 152.50)	49.20 ± 3.59 (44.00-58.00)
P value	0.0001***	0.0001***

Comparison between group was done by unpaired Student's-'t' test, *** = significant at P<0.001.

Table II: Comparison of back muscle and leg muscle strength between different sub group (group B_1 and B_2) of group B (n=100)

Subgroup of B (Rickshaw-puller)	Strength in kg (depending on working experience) Back muscle (Mean ± SD)	Leg muscle (Mean ± SD)
B_1 (5–10yrs working experience) (n=58)	144.65 ± 1.73 (141.00-146.00)	46.53 ± 1.46 (44.00-49.00)
B_2 (11–16yrs working experience) (n=42)	148.54 ± 1.87 (147.00-152.00)	52.88 ± 2.06 (50.00-57.00)
P value	0.0001***	0.0001***

Comparison between group was done by unpaired Student's-'t' test, *** = significant at P<0.001

DISCUSSION

In the present study, the mean back muscle strength of the sedentary worker (group A) and rickshaw-puller (group B) was 121.02±2.36 kg and 146.29±2.62 kg respectively and mean leg muscle strength of the sedentary worker (group A) and rickshaw-puller (group B) was 38.46±2.33 kg and 49.20±3.59 kg respectively. Significant difference (P<0.0001) in all the parameters mentioned above were observed between sedentary worker (group A) and rickshaw-puller (group B). Mean back muscle and leg muscle strength were greater in the rickshaw-puller (group B) than in the sedentary worker (group A). Koley, Khajuria and Melton reported 106.00±23.40 kg mean back muscle strength in cricketers which was significantly lower (P<0.0001) than the present study findings. They also found 52.36±12.90 kg mean leg muscle strength which was significantly higher than the findings of present study.[11] Koley and Jain found 147.33±31.99 kg mean back muscle strength in cyclists.[8] There was no significant difference (P=0.82) with the present study findings. Miyatake et al. found 69.4±15.1 kg mean leg muscle strength in male adolescents which was significantly higher (P<0.0001) than the findings of present study.[12] Another study was carried out by Demirkan, et al., 2014. The researchers reported 180.00±40.00 kg mean leg muscle strength in wrestlers which was significantly higher (P<0.001) than the present study findings.[13] In this study, the group B was further subdivided into two groups (B_1 and B_2) according to their working experience in years. In the present study, the mean back muscle strength was recorded 144.65±1.73 kg in group B_1 (working experience 5-10 years) and 148.54±1.87 kg in group B_2 (working experience 11-16 years). The mean back muscle strength was significantly higher (P<0.0001) in the B_2 group than in the B_1 group. The mean leg muscle strength was recorded 46.53±1.46kg in group B_1 (working experience 5-10 years) and 52.88±2.06 kg in group B_2 (working experience 11-16 years). The mean leg muscle strength was significantly higher (P<0.0001) in the B_2 group than in the B_1 group. Pietraszewska, et al. reported 164.30±13.94 kg mean back muscle strength in the group with 5-12years working experience, which was significantly higher (P<0.0001) than that for group B_1 of the present study. Leg muscle strength based on working experience was not available.[14] So it was not possible to compare the results with other researchers.

The present study was conducted on a small sample size. Only 100 rickshaw-pullers from Northern part of Dhaka Metropolitan City were included in this study. So the result of the study may not be fully representative of whole community of rickshaw-puller in Bangladesh.

No published work was available on back muscle and leg muscle strength on professionals, in Bangladesh. So the result of the study could not be compared with such other studies. Few number of publications by other researchers with similar study were available to compare and correlate with the findings of the present study. Further studies are suggested with larger sample size comprising of male and female workers in various industrial sectors. The more advanced HOGGAN Scientific MicroEFT2 Hand held Dynamometer could be used to get more detailed and accurate information about back muscle and leg muscle strength.

CONCLUSION

Significant difference of mean back muscle and leg muscle strength were observed between sedentary worker (group A) and rickshaw-puller (group B) where the mean back muscle and leg muscle strength were greater in the rickshaw-puller (group B) than in the sedentary worker (group A).

REFERENCES

1. Saini M, Sinha A. Composition of Leg Strength Grip Strength and Back Strength among the Wrestlers Weightlifters and Judokas of College Students. International Journal of Physical Education Fitness and Sports. 2014; 3(1): 100-107.
2. Nikolaidis P. Development of Isometric Muscular Strength in Adolescent Soccer Players. Journal of Physical Education and Sport. 2012; 10(3): 231-242.
3. Marrin K, Bampouras TM. Anthropometric and Physiological Changes in Elite Female Water Polo Players during a Training Year. Serbian Journal of Sports Sciences. 2008; 2(3): 75-83.
4. Tuba M, Defne O, Sonmez M. Muscle strength in relation to Body Composition in the Turkish Male National Judo Team. Journal of Physical Education and Sports. 2012; 12(2): 175-181.
5. Moore K, Dalley AF, Agur AMR. Clinically oriented anatomy. 7th edition. Philadelphia: Lippincott Williams and Wilkins, 2014: pp.265-307.
6. Snell RS. Clinical anatomy by regions. 7th edition. Baltimore, MD: Lippincott Williams & Wilkins, 2012: pp.435-526.
7. Yaprak Y. 2013. The effects of Back Extension Training on Back Muscle Strength and Spinal Range of Motion in Young Females. Journal of Biology of Sports. 2013; 30(3): 201-206.
8. Koley S, Jain KV. Correlation of Back Strength with Selected Anthropometric Variables and Physical Performance Tests in Elite Indian Cyclists. Journal of Biological Research. 2013; 4(11): 80-84.
9. Wikipedia. 2013. Ossification. [online] Available at: <http://en.wikipedia.org/wiki/ossification>[Accessed 1 January 2016].
10. Keller K, Engelhardt M. Strength and muscle mass loss with aging process. Age and strength loss. Muscles, Ligaments and Tendons Journal. 2013; 3(4): 346-350.
11. Koley S, Khajuria A, Melton S. The Correlation between Back Strength and Leg Strength among Indian Inter-University Male Cricketers. Journal of Physical Education and Sports. 2010; 8(2): 125-132.
12. Miyatake N, Miyachi M, Tabata I, Sakano N, HiraoT, Numata T. Relationship between Muscle Strength and Anthropometric, Body composition parameters in Japanese Adolescents. Journal of Sport and Health Science. 2012; 4(1): 1-5.
13. Demirkan E, Kutlu M, Koz M, Ozal M, Favre M. Physical Fitness Differences between Freestyle and Greco-Roman Junior Wrestlers. Journal of Human Kinetics. 2014; 41: 245-251.
14. Pietraszewska J, Burdukiewicz A, Stachon A, Witkowski K, Andrzejewska J, Stefaniak T et al. Is the level of Static Strength and Strength Endurance a reflection of Morphological differentiation among Judo & Ju-Jitsu Athletes? Journal of Martial Arts & Extreme Sport. 2014; 10: 67-73.