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AIMS & SCOPE:

The Green Life Medical College Journal is an english language scientific papers dealing with clinical medicine, basic sciences, epidemiology, diagnostic, therapeutics, public helath and healthcare in relation to concerned specialities. It is an official journal of Green Life Medical College and is published bi-annually.

This Joural is recognized by Bangladesh Medical & Dental Council (BM&DC).

The Green Life Medical College Journal of Bangladesh intends to publish the highest quality material on all aspects of medical science. It includes articles related to original research findings, technical evaluations and reviews. In addition, it provides readers opinion regarding the articles published in the journal.

INSTRUCTION TO AUTHORS:

Papers:

The Green Life Medical College Journal (published bi-annually) accepts contributions from all branches of medical science which include original articles, review articles, case reports, and letter to the Editor.

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The standard layout of a manuscript:

- Title page
- Abstract, including Keywords
- Introduction
- Methods
- Results
- Discussion
- Acknowledgements
- Funding
- List of references
- Tables & Figures
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The pages should be numbered in the bottom right-hand corner and the title page being page one, etc. Start each section on a separate page.

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A separate page which includes the title of the paper. Titles should be as short and concise as possible (containing not more than 50 characters). Titles should provide a

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Abstract:

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Three to six keywords should be included on the summary page under the heading Keywords. They should appear in alphabetical order and must be written in United Kingdom English spelling.

Introduction:

The recommended structures for this section are:

- Background to the study/Introduction
- What is known/unknown about it
- What research question / hypothesis you are interested in
- What objective(s) you are going to address

The introduction to a paper should not require more than about 300 words and have a maximum of 1.5 pages double-spaced. The introduction should give a concise account of the background of the problem and the object of the investigation. It should state what is known of the problem to be studied at the time the study was started. Previous work should be quoted here but only if it has direct bearing on the present problem. The final paragraph should clearly state the primary and, if applicable, secondary aims of the study.

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The title of this section should be 'Methods' - neither 'Materials and methods' nor Patients and methods'. The Methods section should give a clear but concise description of the process of the study. Subjects covered in this section should include:

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- Cognitive Task Analysis (CTA)

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Regardless of the country of origin, all clinical investigators describing human research must abide by the Ethical Principles for Medical Research Involving Human Subjects outlined in the Declaration of Helsinki, and adopted in October 2000 by the World Medical Association. This document can be found at: http://ohsr.od.nih.gov/guidelines/helsinki.html. Investigators are encouraged to read and follow the Declaration of Helsinki. Clinical studies that do not meet the Declaration of Helsinki criteria will be denied peer review. If any published research is subsequently found to be non-compliant to Declaration of Helsinki, it will be withdrawn or retracted. On the basis of the Declaration of Helsinki, the Green Life Medical Journal requires that all manuscripts reporting clinical research state in the first paragraph of the 'Methods' section that:

- The study was approved by the appropriate Ethical Authority or Committee.
- Written informed consent was obtained from all subjects, a legal surrogate, or the parents or legal guardians for minor subjects.

Human subjects should not be identifiable. Do not disclose patients' names, initials, hospital numbers, dates of birth or other protected healthcare information. If photographs of persons are to be used, either take permission from the person concerned or make the picture unidentifiable. Each figure should have a label pasted on its back indicating name of the author at the top of the figure. Keep copies of ethics approval and written informed consents. In unusual

circumstances the editors may request blinded copies of these documents to address questions about ethics approval and study conduct.

The methods must be described in sufficient detail to allow the investigation to be interpreted, and repeated if necessary, by the reader. Previously documented standard methods need not be stated in detail, but appropriate reference to the original should be cited. However, any modification of previously published methods should be described and reference given. Where the programme of research is complex such as might occur in a neurological study in animals, it may be preferable to provide a table or figure to illustrate the plan of the experiment, thus avoiding a lengthy explanation. In longitudinal studies (case-control and cohort) exposure and outcome should be defined in measurable terms. Any variables, used in the study, which do not have universal definition should be operationalised (described in such terms so that it lends itself to uniform measurement). Where measurements are made, an indication of the error of the method in the hands of the author should be given. The name of the manufacturer of instruments used for measurement should be given with an appropriate catalogue number or instrument identification (e.g. Keyence VHX-6000 digital microscope). The manufacturer's town and country must be provided, in the case of solutions for laboratory use, the methods of preparation and precise concentration should be stated.

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In the case of animal studies, it is the responsibility of the author to satisfy the board that no unnecessary suffering has been inflicted on the animal concerned. Therefore, studies that involve the use of animals must clearly indicate that ethical approval was obtained and state the Home Office License number or local equivalent.

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When a drug is first mentioned, it should be given by the international non-proprietary name, followed by the chemical formula in parentheses if the structure is not-well known, and, if relevant, by the proprietary name with an initial capital letter. Dose and duration of the drug should be mentioned in sufficient details. If the drug is already in use (licensed by appropriate licensing authority), generic name of the drugs should preferably be used followed by proprietary name in brackets.

Present the result in sequence in the text, table and figures. Do not repeat all the data in the tables and/or figures in the text. Summarize the salient points. Mention the statistics used for statistical analysis as footnote under the tables or figures. Figures should be professionally drawn. Illustration can be photographed (Black and White glossy prints) and numbered.

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Comments on the observation of the study and the conclusion derived from it. Do not repeat the data in detail, already given in the results. Give implications of the findings, their strengths and limitations in comparison to other relevant studies. Avoid un-qualified statements and conclusions which are not supported by the data. Avoid claiming priority. New hypothesis or implications of the study may be labeled as recommendations.

Letters are welcome. They should be typed double-spaced on side of the paper in duplicate.

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Chapter in a book:
Hull CJ. Opioid infusions for the management of postoperative pain. In: Smith G, Covino BG, eds. Acute Pain. London: Butterworths. 1985,1 55-79.

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Any reader can provide feedback regarding published articles by writing letter to editor. The reader can also share any opinion in relation to medical science.

Prof. Dr. ABM Bayezid Hossain
Editor-in-chief
Green Life Medical College Journal and
Principal
Green Life Medical College

ABOUT THE COLLEGE

INTRODUCTION

In 2005, about fifty distinguished physicians of the country started a hospital to give specialized care in the private sector. They named it Green Life Hospital and it turned out to be a great success. So in 2009, they decided to establish a medical college which will be a non-government, non-profit, self-financing project and will serve the humanity.

This College came into existence in 2009. The college commences its activities with the enrollment of 51 students in the 1st batch in 2010. Since inception, the college has undergone tremendous development and became a splendid centre for learning and development. At present we are enrolling 110 students each year. Among them, numbers of seats are reserved for overseas students.

We continue to evaluate and improve our programme to ensure the best medical education for the students. Our educational strategy is to create a conducive learning environment and to steer our students to acquire adequate knowledge, skills and temperament to practice medicine and be a competent health care professional group.

Green Life Medical College (GMC) is approved by the Ministry of Health and Family Welfare (MOHFW), Government of Bangladesh and Bangladesh Medical and Dental Council (BMDC) and affiliated to the University of Dhaka.

AIMS AND OBJECTIVES OF THE COLLEGE

Aims:

To create a diverse and vibrant graduate scholars in medical discipline and to create highly competent and committed physicians for the country.

Objectives:

- To provide an appropriate learning environment where medical students can acquire a sound theoretical knowledge and practical skills with empathetic attitude to the people.
- To carry out research in medical sciences to scale up the standard of medical education in the country.

LOCATION

The campus is located at 31 and 32, Bir Uttom K. M. Shafiullah Sarak (Green Road), Dhanmondi, Dhaka. The location is at the heart of the mega city Dhaka and is facilitated with very good communication networks.

The Medical College and the Hospital complexes have been raised in a multistoried fully air-conditioned building with an arrangement of approximately 500 patients. The building is equipped with state-of-the-art infrastructure, excellent with an out-patient department and adequate in-patient facilities.

The Intriguing Depths of Scopolamine (Devils Breath): Unveiling its Effects, Uses, and Ethical Considerations

In the realm of pharmacology, few substances have captured both the scientific community's curiosity and the public's imagination quite like scopolamine. Also known as "devil's breath" or "burundanga," scopolamine has garnered attention for its remarkable properties, from its medical applications to its notoriety as a so-called "mind control" drug. This editorial seeks to delve into the multifaceted world of scopolamine, exploring its origins, effects, therapeutic uses, and the ethical dilemmas it raises.

A Historical Prelude: Origins and Discovery

Scopolamine finds its roots in the plant kingdom, specifically within the Solanaceae family, which includes plants like belladonna and jimsonweed. The alkaloid scopolamine is primarily derived from plants such as Datura and Hyoscyamus. Indigenous cultures in various parts of the world have long harnessed the medicinal properties of these plants. Native Americans, for instance, used belladonna for its analgesic effects, albeit with caution due to its potentially toxic nature.

The isolation of scopolamine from plants occurred in the 19th century, marking a turning point in its scientific exploration. Its chemical structure was elucidated, leading to a deeper understanding of its physiological effects on the human body. These effects stem from scopolamine's interaction with the cholinergic system, a crucial part of the nervous system that regulates various bodily functions. According to a 1995 Wall Street Journal article, about half of all emergency room admissions in Bogota, Colombia were for burundanga poisoning. Scopolamine is also present in Jimson Weed (*Datura stramonium*)

Navigating the Neurological Landscape: Effects and Mechanisms

Scopolamine's impact on the nervous system revolves around its antagonistic action on acetylcholine receptors. By blocking these receptors, scopolamine disrupts the normal balance of neurotransmitters, giving rise to a range of effects. These effects include dilated pupils, dry mouth, impaired cognition, and altered perception of reality. Notably, scopolamine's influence on memory formation has been of great interest to researchers, as it underscores its potential in the treatment of memory-related disorders.

Beyond its physiological effects, scopolamine's influence on memory has prompted investigations into its potential applications beyond medicine. In popular culture, tales of scopolamine-induced amnesia have fostered myths about its supposed use in criminal activities, including instances of "zombification." Recreationally for its hallucinogenic properties, the experiences are often unpleasant, mentally and physically. It is also physically dangerous and officially classified as a deliriant drug. The effects of scopolamine were studied for use as a truth serum in interrogations in the early 20th century, but because of the side effects, investigations were dropped. In 2009, the Czechoslovak state security secret police were proven to have used scopolamine at least three times to obtain confessions

However, separating fact from fiction is essential in discussing scopolamine's broader significance.

Medicine's Arsenal: Therapeutic Applications

In the realm of medicine, scopolamine has found its niche. One of its most well-known uses is in the prevention of motion sickness and nausea, particularly in the form of transdermal patches. These patches provide a controlled release of scopolamine, offering relief to individuals traveling by land, air, or sea. The patch's effectiveness stems from its ability to modulate the vestibular system, which plays a pivotal role in balance and spatial orientation.

Furthermore, scopolamine has demonstrated potential in addressing more complex neurological conditions. Research suggests its promise in treating conditions such as Alzheimer's disease and Parkinson's disease, where memory and motor control deficits are prominent. By targeting cholinergic dysfunction, scopolamine may contribute to restoring cognitive clarity and motor coordination.

Ethical Considerations and Societal Implications

As with any potent substance, scopolamine raises ethical questions that necessitate careful consideration. Its dual nature—both a therapeutic agent and a substance associated with sinister intentions—complicates ethical deliberations. The responsible use of scopolamine in

medical contexts contrasts sharply with its portrayal in media as a "mind control" tool.

The potential for misuse of scopolamine invites discussions about regulation and public awareness. Ensuring that scopolamine is accessible exclusively for legitimate medical purposes requires a balance between medical advancement and societal safety. Moreover, accurate education about scopolamine is essential to dispel myths that perpetuate fear and misinformation.

Conclusion: Navigating the Enigma of Scopolamine

In the vast expanse of pharmaceutical exploration, scopolamine stands out as a substance of profound complexity. From its historical roots to its modern therapeutic applications, scopolamine's journey is marked by scientific advancement, ethical dilemmas, and societal perceptions. By unraveling its effects and uncovering its potential, we can shed light on the enigma that is scopolamine. To prevent assault due to scopolamine — or any drug for that matter —we have to follow these rules, as recommended by the Government -Never leave food or drinks unattended when traveling,do not accept food or drinks from strangers or new acquaintances,Travel in a large group when possible, and don't leave with a stranger,seek medical assistance immediately if you believe you have been drugged.

As research continues, it is our collective responsibility to approach scopolamine with a balanced perspective. Its medical potential offers hope for addressing debilitating conditions, while ethical considerations remind us to tread cautiously. The story of scopolamine teaches us that scientific discovery, coupled with ethical consciousness, is the compass that guides us through uncharted territory, ensuring that we harness knowledge for the betterment of humanity.

Journal of Green Life Med. Col. 2022; 7(1): 1-2

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ORIGINAL ARTICLE

Parenting Practices and Behaviour of School Children in Dhaka, Bangladesh

KHAN S[1*], MALEK A[2*]

Abstract

Introduction: *Behavior problem in children is alarmingly high. Parenting practices has a critical role that contributes to child behavior. The aim of this study was to assess parenting practices and its relationship to behavior of their children.*

Methods: *A total of 278 mothers of school children aged 6-8 years were interviewed using semi-structured Bangla questionnaires based on the Alabama Parenting Practices Questionnaire (parent form) and Strength and Difficulty Questionnaire (parent-rated version). Parenting practices were categorized as positive and negative. Two branches of South Point School and College in Dhaka city were visited for data collection. Descriptive statistics were applied to analyze all demographic information of the participants, and correlation coefficients were obtained to examine the association between parenting practices and children's behaviors.*

Results: *Average positive parenting practices score (67.32±8.28) obtained by the mothers was at the higher level whereas average negative parenting practices score (41.71±7.25) was at the lower level of possible ranges of scores representing better parenting practices. Average pro-social behavior score (7.54±1.90) obtained by the children was at the higher level whereas average total difficulty behaviour score (11.49±4.71) was at the lower level of possible ranges of scores representing better child behaviour. Positive parenting practices of mother is positively correlated ($r = 0.197$, $p = 0.001$) with pro social behavior and negatively correlated ($r = - 0.192$, $p = 0.001$) with total difficulty behavior of the children. Negative parenting practice is positively correlated ($r = 0.212$, $p < 0.001$) with total difficulty behavior and negatively correlated ($r = -0.193$, $p = 0.001$) with pro social behavior of the children.*

Conclusion: *Our research provides an insight about possible links between parenting practices and behavioural problems among school children. Further large-scale study research is recommended to explore the relationship between different subscales of positive and negative parenting practices and different subscales of child behavior in context of Bangladesh.*

Key words: *Parenting practice, Behavior of children, Alabama Parenting practices Questionnaire, Strength and Difficulty Questionnaire*

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Introduction:

Emotional and behavioural disorders are defined as a condition wherein a child's behavioral or emotional responses deviate significantly from the generally accepted age-appropriate norms observed in children with a similar ethnic or cultural background, leading to notable impairment in social relationships, self-care, educational advancement, or classroom conduct.[1] Some examples include aggression, disobedience, sleeping problems and anxiety. Disruptive behaviors in early childhood are predictive of negative mental health outcomes in later life, ranging from school failure to substance abuse and criminality.[2]

Numerous studies have investigated the prevalence of child psychiatric disorders worldwide over the years. However, there is considerable variability in the demographics of the study populations and the

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methodologies employed. A meta-analysis conducted in 2010 across 51 Asian countries revealed a prevalence of child and adolescent mental health problems/ disorders ranging from 10% to 20%.[3] A study among school children aged 6–16 in Pakistan indicated a prevalence of 15.9% for behavior problems and 22.5% for emotional problems.[4] In Sri Lanka, a study reported a prevalence of 13.8% for emotional and behavioral problems in 7-11 year old school children.[5] A study among Nepali school aged children, 6-20 years, revealed adjusted prevalence of emotional and behavioral problems was 18.3%.[6]

Research on emotional and behavioural problems among young children in Bangladesh are scarce. In a systematic review conducted in 2014 in Bangladesh, the prevalence of mental disorders among urban and rural children aged 2–16 was identified to range from 13.4% to 22.9% [7]. However, the recruitment of study participants in those studies were largely hospital-based.[7] A recent study among school going children aged 5-11 years in Dhaka, Bangladesh reported the prevalence of emotional and behavioral disorders was 20.9%.[8] However, none of these studies reported on parental practices and their correlations with the emotional and behavioral problems of young children in Bangladesh.

A variety of child- and family-related factors have been implicated in the aetiology and maintenance of disordered behavior in early childhood. Sociologists and public health researchers have concentrated their efforts on the mother's social circumstances (socioeconomic and marital status, mother's lifestyle), while psychologists have had a greater interest in the mother's marital relationships, her mental health and pattern of parenting.[1] Other researchers have focused upon the mother's (or child's) health as a cause of child behavior problems.[9]

Parenting practices are crucial for child behavior. Parenting practice is a specific behavior that a parent uses in raising a child.[10] These can refer to the imposing and use of schedules, rules, expectations, punishments, rewards, etc. Basically, parenting practices can refer to any type of regular interaction that a parent has with their children. For example, when socializing their children to succeed in school, parents might enact certain practices such as doing homework with their children, providing their children with time to read, and attending their children's school functions. Parenting practices reflect the cultural understanding of children.[11] In the current era marked by continuous technological advancements, growing expectations for children to excel, the breakdown of families, and swiftly changing socio-cultural paradigms, there is a notable and disruptive increase in behavior problems among children.[12]

Previous studies documented how various parenting practices influence child behavior and development of either pro-social behavior or psychosocial maladjustment.[13,14] Research focusing on the early development of disruptive behavior problems is crucial to understand the etiology and developmental course of these behaviors, and to design appropriate interventions. However, little is known about the parenting practices and factors associated with behaviour of their young children in Bangladesh. This study aimed to assess the parenting practices of Bangladeshi mothers and their potential association with the behavior of their children. By contributing to the existing knowledge on parenting practices and child behavior, this study is anticipated to contribute to the development of a knowledge base for improved parenting that could aid in mitigating problem behavior among children.

Methods:

A cross-sectional study was conducted with an aim to assess the parenting practice of mothers having 6 - 8 years old children of Dhaka city and its relationship with their child's behavior.

Two branches of South Point School and College of Dhaka city were visited for data collection. The study was conducted for a period of 12 months from 1st July 2014 to 30th June 2015. A total of 278 mothers having children aged 6 to 8 years were interviewed based on their availability at the time of data collection using semi-structured Bangla questionnaires based on Alabama Parenting practices Questionnaire (parent form) and Strength and Difficulty Questionnaire.

Alabama Parenting Questionnaire (APQ – parent form) documents the five characteristics of parenting practices, namely: involvement (parent participating in the educational processes and experiences of their children), positive parenting (parent being loving, understanding, reasonable and protective), poor monitoring/supervision (parent does not know or supervise the child's academic and social schedule), inconsistent discipline (parent is inconsistent in disciplinary practices) and corporal

punishment (parent spank or hits the child as punishment) [15]. Parenting practices were viewed as positive and negative parenting practices. Positive parenting practices score was calculated by summing the scores of involvement (IN) and positive parenting (PP) subscales and negative parenting practices score was calculated by summing the scores of poor monitoring and supervision (PMS), inconsistent discipline (ID) and corporal punishment (CP) subscales. Higher positive parenting score and lower negative parenting score indicate better parenting practice.[15] APQ questionnaire was translated into Bangla and used in this study.

Strength and Difficulty Questionnaire (SDQ - parent rated version) contains five clinical sub- scales e.g., emotional symptoms, conduct problems, hyperactivity, peer problems and pro-social behavior. Pro social behavior score ranges from 0 - 10 and the sum of scores on subscales of emotional symptoms, conduct problems, hyperactivity and peer problems usually account for total difficulty behavior score. Higher the pro social score and lower the total difficulty score indicate better child behavior. Several versions of SDQ in Bangla were applied and validated elsewhere.[16]

Entry of data and all the statistical analysis and interpretation of the data were carried out using the statistical software program SPSS version 17.

Range, means, and standard deviations were obtained for all demographic information of the participants relevant to the present study. Parenting practices scores of mothers were compared. Correlations were used to examine the association between parenting practices and behaviors of children. The protocol was approved by the Ethical Committee of National Institute of Preventive and Social Medicine.

Results:

The boy girl ratio of the study population was 1.2:1. The majority of the children were 7 years old (70%), studying in KG – II (54.4%) and English version of national board (50.7%). Fathers were, on average, 7 years older (40.28 ± 4.81 years) than mothers (33.21 ± 4.73 years). More than half (55.4%) of the mothers were between 31 – 40 years; about a third (32%) were below 30 years. On the other hand, more than half of the fathers (55%) were above 40 years old and 43.5% were of 31- 40 years.

More than half of the mothers (60.8%) and fathers (66.9%) were educated up to master's level. Fathers having professional degree such as MBBS/BDS, Engineering, LLB were more common (10%) than mothers (6.1%) (Table I).

Table-I

Demographic and family characteristics of study participants in Dhaka city, Bangladesh

Characteristics	n (%)
Total	278
Mother's Education	
Below SSC	4 (1.4)
SSC	16 (5.8)
HSC	46 (16.5)
Bachelor	26 (9.4)
Master's	169 (60.8)
Professional degree	17 (6.1)
Father's Education	
Below SSC	6 (2.2)
SSC	7 (2.5)
HSC	21 (7.6)
Bachelor	30 (10.8)
Master's	186 (66.9)
Professional degree	28 (10.0)
Below SSC	6 (2.2)
Mother's occupation	
Homemaker/ Unemployed	224 (80.6)
Business	4 (1.4)
Service	39 (14.0)
Physician	10 (3.6)
Engineer	1 (0.4)
Lawyer	0 (0)
Father's occupation	
Homemaker/ Unemployed	1 (0.4)
Business	126 (45.3)
Service	123 (44.3)
Physician	16 (5.6)
Engineer	11 (4.0)
Lawyer	1 (0.4)
Type of family	
Nuclear	176 (63.3)
Joint	102 (36.7)
Family size	
3	74 (26.6)
4-5	129 (46.4)
>=6	75 (27.0)
Number of children	
Only child	137 (49.3)
2	112 (40.3)
3	29 (10.4)
Monthly expenditure for the families (in taka) [a]	
<30, 000	29 (10.4)
30, 000 – 40, 000	42 (15.1)
40, 000 – 50, 000	89 (32.0)
50, 000 – 60, 000	40 (14.4)
> 60, 000	78 (28.1)
Monthly expenditure for the children (in taka) [a]	
<5, 000	117 (42.1)
5, 000 – 10, 000	113 (40.6)
>10, 000	48 (17.3)

[a] Monthly expenditure was categorized based on actual income reported by study participants

Majority of the mothers (80.6%) were housewives. In the distribution of the employment status of the fathers, majority of them were businessman (45.3%) (Table 1).

More than half (63.3%) of the respondents were living in nuclear family. Number of family member ranged from 3 to 14 with an average family size of 4.8. Highest proportion (46.4%) of the respondents had family size 4 - 5. About half (49.3%) of the respondents had only one child, 40.3% had two children and the rest had more than two children (Table I).

Parenting practices of the mothers

Mean positive parenting practices score obtained by the mothers were 67.32 ± 8.28 with a range from 35 to 80 and mean negative parenting practices score obtained by the mothers were 41.71 ±7.25 with a range from 23 to 62. Among parenting practices positive parenting score were at the higher level of possible range (16-80) of score whereas negative parenting score were at the lower level of possible range (19-95) of score. In positive parenting, average involvement score (41.00 ± 5.45) and average positive parenting score (26.32 ± 3.78) both were at the higher level of possible range of scores, respectively. The average inconsistent discipline score (18.33 ± 3.43) was at higher level than the score in other dimensions of negative parenting scale (Table II).

Behaviours of children of study mothers

Mean scores obtained by children was 7.54±1.90 with a range from 1 - 10 on pro social behaviors scale and 11.49±4.71 with a range from 1 - 26 on total difficulty behaviors scale. Among behaviors of children, average pro social behavior score was at the higher level of possible range (0 - 10) of score whereas average total difficulty behavior score was at the lower level of possible range (0 - 40) of score. Children, on average scored higher (3.66±2.16) in hyperactivity subscale than in other subscales of total difficulty behaviors subscale (Table III).

Association of parenting practices and behaviors of children

To find out the association of parenting practices score of mothers and behaviors score of children Pearson's correlation was carried out. Parenting practices were viewed as positive and negative parenting practices and behaviors of the children were viewed as pro social behaviors and total difficulty behaviors.

Weak positive correlation (r = 0.197, p = 0.001) was observed between positive parenting practices score and pro social behavior score of children which indicate pro social behaviors score increased with the increase in positive parenting practices score. Weak negative correlation (r = -0.192, p = 0.001) was observed between positive parenting practices score and total difficulty behavior score of

Table-II

Parenting practices scores of the mothers of school children in Dhaka city, Bangladesh

Parenting practices	Possible scores	Range	Mean ± SD
Positive parenting subscale scores	16 - 80	35 - 80	67.32 ± 8.28
Involvement scores	10 - 50	20 - 50	41.00 ± 5.45
Positive parenting scores	6 - 30	12 - 30	26.32 ± 3.78
Negative parenting subscale scores	**19 - 95**	**23 - 62**	**41.71 ± 7.25**
Poor monitoring and supervision scores	10 - 50	10 - 36	15.60 ± 4.98
Inconsistent discipline scores	6 - 30	6 - 26	18.33 ± 3.43
Corporal punishment scores	3 - 15	3 - 15	7.78 ± 2.60

Table 3 Behavioral scores of school children of study mothers in Dhaka city, Bangladesh

Behaviours of the children	Possible range	Range	Mean ± SD
Pro social scores	0 -10	1 - 10	7.54±1.90
Total difficulty behaviors scores	0 - 40	1 - 26	11.49±4.71
Emotional problem scores	0 - 10	0 - 8	1.99±1.69
Conduct problem scores	0 - 10	0 - 9	2.72±1.82
Hyperactivity scores	0 - 10	0 - 9	3.66±2.16
Peer problem score	0 - 10	0 - 8	3.13±1.50

children indicating total difficulty behavior score decreased with the increase in positive parenting practices score.

Weak negative correlation ($r = -0.193$, $p = 0.001$) was observed between negative parenting practices score and pro social behaviors score of children indicating pro social behaviors score increased with the decrease in negative parenting practices score. Weak positive correlation ($r = 0.212$, $p < 0.001$) was observed between negative parenting practices score and total difficulty behaviors score of children indicating total difficulty behaviors score increased with the increase in negative parenting practices score.

Discussion:

Parenting practices of study mothers

This study documents five dimensions of parenting practices: involvement, positive parenting, poor monitoring/supervision, inconsistent discipline, and corporal punishment. Parenting practices are classified as positive and negative. Positive parenting practices include two subscales: involvement and positive parenting. Negative parenting practices include three subscales: poor monitoring/supervision, inconsistent discipline, and corporal punishment. Higher scores on positive parenting and lower scores on negative parenting indicate better parenting practices. The mean positive parenting practices score obtained by the mothers was 67.32 ± 8.28, ranging from 35 to 80. The mean negative parenting practices score obtained by the mothers was 41.71 ± 7.25, ranging from 23 to 62. Among parenting practices, positive parenting scores were at the higher end of the possible range (16-80), while negative parenting scores were at the lower end of the possible range (19-95). This suggests that Bangladeshi mothers were practicing positive parenting more and avoiding negative parenting.

In the positive parenting dimensions, the average involvement score (41.00 ± 5.45) and average positive parenting score (26.32 ± 3.78) were both at the higher end of the possible range of scores. This indicates that mothers were practicing their parenting positively with high involvement. For example, they had friendly talks with their child, volunteered to help in the child's special activities, played games together, enquired about the child's day at school, helped with homework, asked about the child's plans, talked about the child's friends, asked the child to help plan family activities, attended parent-teacher meetings, and complimented, hugged, or kissed the child when he/she did something well. They also praised or rewarded the child for obeying or behaving well and appreciated the child when he/she helped with housework. The average inconsistent discipline score (18.33 ± 3.43) was at a higher level than the score in other dimensions of the negative parenting scale (Table 2). This indicates that among the negative dimensions of parenting practices, mothers were more likely to practice inconsistent discipline, such as not carrying out the punishment that had been threatened, avoiding punishing the child when required, getting manipulated by the errant child to avoid punishment, and lifting restrictions earlier than originally stated, more than poor monitoring and supervision and corporal punishment. Examples of poor monitoring and supervision included not knowing or forgetting the child's schedule, not checking whether the child had returned home from school on time, not checking whether the child kept company with "known" friends, not ensuring that the child was not alone at home without adult supervision, and not ensuring that when the child went out after dark, he/she was accompanied by an adult. Examples of corporal punishment included spanking the child with a hand, slapping, or hitting with a belt when he/she had done something wrong.

Behaviors of the children of study mothers

This study assesses problem behaviors related to emotional symptoms, conduct problems, hyperactivity-inattention symptoms, and peer relationship problems, with the fifth assessing pro-social behaviors. The behaviors of the children were categorized as pro-social behaviors and total difficulty behaviors. Higher scores on the pro-social subscale and lower scores on total difficulty subscales indicate better child behavior. The mean scores obtained by children were 7.54 ± 1.90, ranging from 1 to 10 on the pro-social behavior scale, and 11.49 ± 4.71, ranging from 1 to 26 on the total difficulty behavior scale. Among these behaviors, the average pro-social score was at the higher level of the possible range (1 - 10) of the score, while the average total difficulty behavior score was at the lower level of the possible range (0 - 40) of the score. This suggests that children of study mothers were more considerate of other people's feelings, shared readily with other children, were helpful if someone was hurt, kind to younger children, and often volunteered to help others. On the other hand, the average total behavior score was at the lower level of the possible range (0 - 40) of the score, indicating that children were restless, had temper tantrums, felt downhearted, got on better with adults than with other children, etc.

On average, children scored higher (3.66 ± 2.16) on the hyperactivity subscale than in other subscales of total difficulty behaviors, indicating that children of study mothers showed restlessness, were overactive, constantly fidgeting or squirming, easily distracted, their concentration wandered, and they did not think things out before acting and did not see tasks through to the end. This was higher compared to behaviors such as temper tantrums, feeling downhearted, and getting on better with adults than with other children.

Association between parenting practices and behaviors of children

Parenting practices were categorized as positive and negative, while children's behaviors were classified as prosocial and total difficulty behaviors.

A weak positive correlation was observed between the scores of positive parenting practices and prosocial behavior in children, indicating that prosocial behavior increased with higher positive parenting scores. Conversely, a negative correlation was found between positive parenting scores and total difficulty behavior scores in children, suggesting a decrease in total difficulty behaviors with an increase in positive parenting practices.

A weak negative correlation was identified between negative parenting practices scores and prosocial behavior scores in children, suggesting an increase in prosocial behaviors with lower negative parenting practices scores. Conversely, a positive correlation was observed between negative parenting practices scores and total difficulty behavior scores in children, indicating an increase in total difficulty behaviors with higher negative parenting practices scores.

This study's strength lies in the accurate depiction of parenting practices, as data were gathered through interviews, minimizing non-response and social desirability biases. The quality and nature of parental nurturance significantly shape a child's future development. Given the limited knowledge about parenting practices and their relationship with child behavior in Bangladesh, this study's results contribute to understanding parenting practices in the Bangladeshi context, highlighting the need for improved parenting strategies to reduce problematic behaviors in children.

There are several limitations of this research. The study findings may not be generalizable as data was collected from one school of Dhaka city. Since this study relied only on information obtained from parent, rather than from the children themselves, it is possible that the perceptions of these children might have differed from those of their parents. The findings of relationship between parenting practices and behavior of children might not be sufficient to measure the causal association as this was a cross-sectional study. Although the study was conducted several years back, the study provides a comprehensive overview of parenting practices and their correlations with behaviours of children and findings are still relevant in the current context.

Conclusion:

This study sheds light on the relationship between parenting practices and behavioral issues among school children in Bangladesh. The findings suggest that positive parenting practices are correlated with favorable child behaviors, while negative parenting practices exhibit associations with challenging behaviors. The study emphasizes the need for a more extensive investigation, encompassing different dimensions of parenting practices and child behavior. Such comprehensive research will contribute to a nuanced understanding of these dynamics in the unique cultural and social context of Bangladesh. Ultimately, our insights underscore the significance of cultivating positive parenting strategies to foster the well-being of children and reduce behavioral challenges in the local context.

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ORIGINAL ARTICLE

Host Factors and Blood Group Related to RT-PCR Positive COVID-19 Patients in a Tertiary Care Hospital

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Abstract

Introduction: The rapid emergence of Novel coronavirus (COVID-19) is a global pandemic, currently spreading across the world. Susceptibility to contracting COVID-19 and severity of the disease while it runs its course seems to be related to a number of host factors and as well as blood group related factors.

Methods: A cross sectional type of descriptive study conducted in PCR & Molecular Laboratory of Green Life Hospital Ltd. aims to find out the relationship of ABO blood type with RT-PCR positive COVID patients. Data were collected by data collection sheet and inputted into data spread sheet through online link to Google form.

Results: Among 1923 positive cases median (IQR) of age was 44.0 (31.0 – 59.0) years and highest number (21.4%) of people were in 31- 40 years of age group. In this study median (IQR) age of female and male was almost same. But male were more vulnerable than female in age group of 31 to 40 and also 61 to 70. This study revealed that people of positive cases having O positive and B Positive blood group were highest in percentage (25.8% and 25.6% respectively) followed by A positive (21.9%) and AB positive (8.5%). In this study O positive and A Negative blood group had statistically significant relationship with COVID positive test result (X2 = 9.291, p = 0.002 and X2 = 5.460, p = 0.019 respectively). Odds with 95% CI of O positive blood group indicate that it has more chance to be COVID positive (Odds ratio = 1.199, CI = 1.067 – 1.348) and A negative act as a protective factor (Odds = 0.798, CI = 0.661- 0.965).

Conclusion: ABO blood typing could be helpful marker to guide physicians with the early diagnosis and follow-up of COVID-19. More comprehensive studies are needed to evaluate the independent effect of blood groups on COVID 19 infection. Individuals with blood group O positive must diligently uphold personal health hygiene measures and undergo screening test to protect themselves against COVID-19.

Key wards: RT-PCR, COVID-19, Blood group

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Introduction:

Novel coronavirus (COVID-19) is a global pandemic currently spreading rapidly across the world. Susceptibility to contracting COVID-19 and severity of the disease while it runs its course seems to be related to a number of host factors and as well as blood group related factors.

COVID-19, caused by the SARS-CoV-2 virus and has caused over 21.1 million confirmed infections and over 761,000 deaths worldwide as of August 17, 2020.[1] SARS-CoV-2 is spread by respiratory droplets and diagnosed by detection of viral genome by real-time reverse transcription-polymerase chain reaction (RT-PCR) testing of a nasopharyngeal swab or other specimen.[2]

Some factors for like age, sex, smoking and chronic co-morbidities are responsible for COVID-19 morbidity and

mortality.[3,4] The observed variability in susceptibility to SARS-CoV-2 and severity of COVID-19 have raised intense interest in their environmental and genetic risk factors. The ABO blood type has formerly been associated with the status of COVID – 19 infection.[5]

Several works have been published to understand the great heterogeneity in the infection and the clinical manifestations of SARS-CoV-2 in different patients. Several biomarkers have been proposed as risk or protective factors. In this aspect, a recent scientific paper, presents the results of a Genome-wide analysis focused on COVID19 patients.[6] One of the associated loci in chromosome 9 which point to an association between ABO blood group and risk of infection by SARS-CoV-2. This association with the ABO blood group has been previously reported in other series showing that Group A is a risk factor while Group O seems to be a protective factor against SARS-CoV-2 infection. These reports motivated widespread interest in evaluating ABO blood groups as potential COVID-19 risk factors. [7]

It has been revealed that the blood group antigens found in erythrocytes and other tissues interact with microorganisms such as bacteria, viruses, parasites and fungi. Differences in blood group antigen expression can increase or decrease host susceptibility to many infections. This can play a direct role in infection by acting as a receptor or coreceptor for blood group antigens, microorganisms, parasites and viruses.[8,9] ABO antibodies can also be considered as part of the innate immune system against some bacterial pathogens and enveloped viruses carrying ABO-active antigens.[10] Helicobacter pylori,[11] Vibrio cholera[12,13], hepatitis C virus,[14] human immunodeficiency virus[15] and SARS[16] are some of the infectious agents that have been shown to be associated with human blood groups.

Although previous studies have revealed several risk factors for Corona virus disease, the relationship between SARS-COV-2 with the ABO blood group is yet to be established. Moreover, very few studies were conducted in Bangladesh to find the link between the two. This study aimed to find out the relationship between the ABO blood type and RTPCR positive COVID-19 patients.

ABO blood typing could be helpful marker to guide physicians with the early diagnosis and follow-up of COVID-19 and help to bring confidence to identifying those patients warrant closest surveillance.

Methods:

This was a descriptive type of cross sectional study conducted from 20th March to 19 July, 2021. It was carried out in PCR & Molecular Laboratory of Green Life Hospital Ltd. to evaluate the relation of ABO blood group and RT-PCR positive COVID-19 Patients. Eight thousand seven hundred and twenty six cases were selected from all persons those who gave sample for COVID-19 RT- PCR test within that period of time. Data were collected by data collection sheet and inputted into data spread sheet through online link to Google form (URL link: https://forms.gle/SRDsTFikQuzWmJHk8). After completion of data collection and entry, those was checked, verified, edited for consistency and rechecked. Data analysis was done by using 26 version of SPSS software. Then various tables were made and analyzed according to the objectives. Frequency and descriptive analysis were done initially followed by bi-variate analysis. Chi-square test was done for categorical variables.

Results:

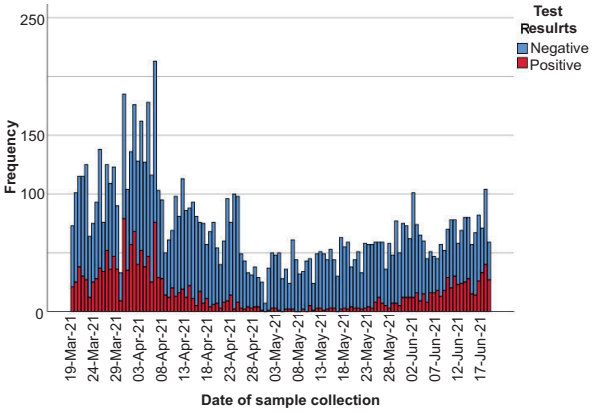

Figure-1: *Distribution of number of sample collection layered with test result according to date.*

The graph illustrates the number of cases reached its peak in between the first and second week of April followed by a gradual decline in the next few weeks. There was a steady rise in cases again around the third week of June that significantly reached a high in the third week of July.

Table-I

Distribution of sample by Residence including areas under Dhaka District (n=6002)

Residence	f	%
Dhanmondi	2004	33.3
Mirpur	1223	20.3
Khilgaon	640	10.6
Tejgaon	527	8.7
Old Dhaka	395	6.5
Mohammadpur	389	6.4
Gulshan	262	4.3
Jatrabari	211	3.5
Baridhara	207	3.4
Keraniganj	144	2.3
Total	6002	100

Two third of the people (77.3%) were from Dhaka followed by Chittagong (13.4%) and other divisions. From Dhaka division, maximum samples were from Capital City Dhaka and second highest from Narayanganj area. One third of the samples were from Dhanmondi area that is 33.3% followed by Mirpur (20.3%).

Table-1I

Specimen collection site

Specimen	f	%
Nasal Swab	8638	99.0
Throat Swab	88	1.0
Total	8726	100.0

Ninety nine percent specimen was collected from nasal swab and only 1% specimen from throat swab.

Table-III

COVID test Results

Test	f	%
Negative	6803	78.0
Positive	1923	22.0
Total	8726	100.0

Among 8726 people, maximum (78 %) tested negative whereas only 22% were positive.

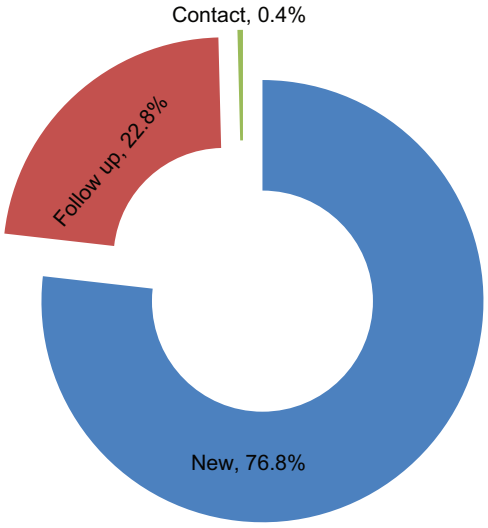

Figure-2: *COVID-19 positive cases with case types (n = 1923)*

Among the COVID-19 positive persons 76.8% were new cases. It was found that 22.8% follow-up cases but only 0.4% was contact case.

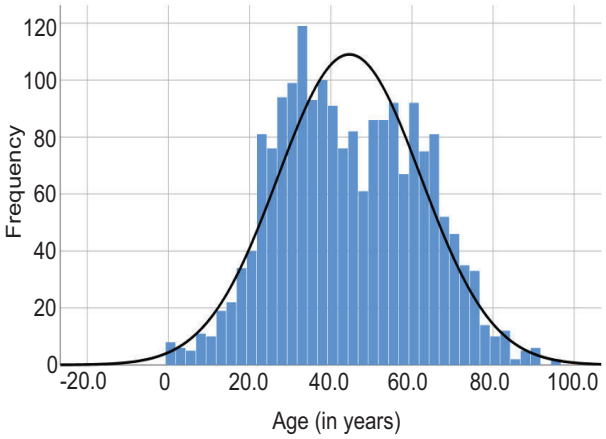

Figure-3: *Age distribution of positive cases (n=1923)*

Among all COVID positive cases, highest number of (21.4%) of people were in 31- 40 years of age-group and almost same (17%) were in 21-30 and 51-60 age-groups but only 1.1% were in 81-90 years of age group. Only 0.3% was in above 90 years. Median (IQR) age of COVID-19 positive patients was 44.0 (31.0 – 59.0) years.

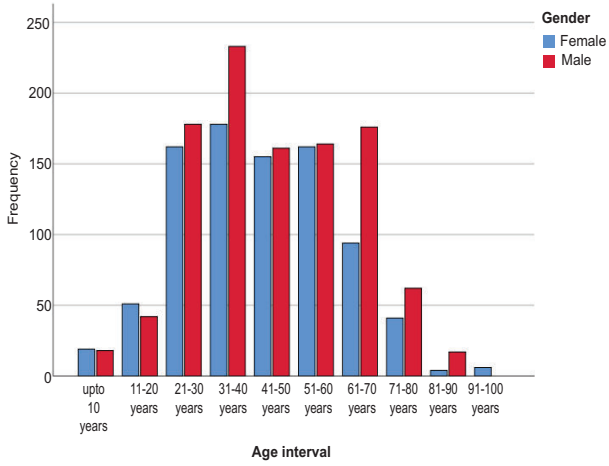

Figure-4: *Gender distribution according to age group of COVID positive cases (n=1923)*

Among positive cases median (IQR) age of female and male were almost same that is 43.0 years (30.0 – 56.0) and 44.0 years (32.0 – 60.0) respectively. But no of test positive male were more than female in age-groups of 31 to 40 and 61 to 70 years. The ratio of male and female were almost same in other age groups. It was surprising that only female were affected after 90 years.

Table-IV

Symptoms of positive cases (n=1923)

Symptoms	Frequency	Percentage (%)
Asymptomatic	154	8.0
Symptomatic [a]	1769	92.0
Fever	946	49.2
Cough	1357	70.6
Shortness of Breath	1041	54.1
Sore Throat	645	33.5

[a] = Multiple answers were accepted.

Among all test positive sample very few (8%) were asymptomatic. Most of them (92%) came with symptom like cough (70.6%), shortness of breath followed by fever and sore throat.

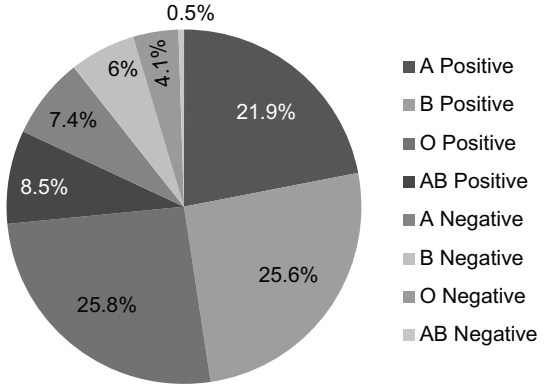

Figure-5: *Distribution of Blood group among test positive cases (n=1923)*

People having O positive and B Positive blood group were highest in percentage (25.8% and 25.6% respectively) followed by A positive (21.9%) and AB positive (8.5%). Rh negative blood groups were very few in percentage.

Table-V

Association between COVID positive test results with blood group (n=1923)

Variable	Odds Ratio	95% Confidence Interval	P value
A Positive	1.050	0.929 – 1.187	0.437
B Positive	0.992	0.884 – 1.114	0.897
O Positive	1.199	1.067 – 1.348	0.002 (<0.005)
AB Positive	0.893	0.746 – 1.069	0.217
A Negative	0.798	0.661 - 0.965	0.019 (<0.05)
B Negative	0.836	0.678 – 1.031	0.093
O Negative	0.981	0.760 – 1.268	0.885
AB Negative	0.721	0.364 – 1.425	0.344

O positive and A Negative blood group had statistically significant relationship with COVID positive test result (X2 = 9.291, p = 0.002 and X2 = 5.460, p = 0.019 respectively). Odds with 95% CI of O positive blood group indicate that it has more chance to be COVID positive (Odds ratio = 1.199, CI = 1.067 – 1.348) and A negative act as a protective factor (Odds = 0.798, CI = 0.661- 0.965).

Discussion:

In this study among 1923 positive cases median (IQR) of age was 44.0 (31.0 – 59.0) years and highest number (21.4%) of people were in 31- 40 years of age group. This result coincide with another study in United State, where mean ± SD of age was 44.6 ± 16.8 among test positive people.[17] But in Turkey among 823 study population belonged age 18–97 years, mean ± SD was 58.6 ± 17.0.[18] Another study in Bangladesh among 474 positive cases mean ± SD of age was 64 ±16.[19]

In this study median (IQR) age of female and male was almost same. But male were more vulnerable than female in age group of 31 to 40 years and also 61 to 70 years. Similarly in Turkey, male cases (57.1%) were more in number than female (42.9%).[18] Opposite scenario found in United State where women were more at risk than man (73.6% vs. 26.4%)[17] and also in another study of Bangladesh.[19]

This study revealed that people of positive cases having O positive and B Positive blood group were highest in percentage (25.8% and 25.6% respectively) followed by A positive (21.9%) and AB positive (8.5%). Rh negative blood groups were very few in percentage. Similarly a study conducted in United State where the frequencies of O (48.1%) was highest followed by A, B and AB were 39.6%, 9.0%, 3.2% respectively.[17] Other studies in different places also showed different scenario where blood group A was predominant among cases.[19,20] A study conducted in Bangladesh the ABO blood group displayed a percentage distribution for A, B, AB and O were 37.35%, 17.38%, 26.46%, 18.81% respectively and clinical symptoms were significantly more common in patients with blood type A ($p < 0.05$).[19] In Lebanon also, COVID 19 patients with their blood group A+ was 39.9%, followed by O+ (35.6%), B+ and AB+ were 11.1% and 5.0% respectively. Rh negative were very few in number.[20] In Delhi, India, COVID-19-infected patient's blood group B was predominant (41.80%) followed by the frequencies of A, O, and AB were 29.93%, 21.19%, and 7.98%, respectively. But 98.07% were Rh positive.[21]

The growing interest in the relationship between ABO blood groups and COVID 19 led to several subsequent studies which reported controversial results. In this study

O positive and A Negative blood group had statistically significant relationship with COVID positive test result (X2 = 9.291, p = 0.002 and X2 = 5.460, p = 0.019 respectively). Odds with 95% CI of O positive blood group indicate that it has more chance to be COVID positive (Odds ratio = 1.199, CI = 1.067 – 1.348) and A negative act as a protective factor (Odds = 0.798, CI = 0.661- 0.965). But this findings is not coincide with the study conducted in Delhi, India, where blood group A (odds ratio, 1.53; CI, 1.40–1.66; p < 0.001) and B (odds ratio, 1.15; CI, 1.06–1.24; p < 0.001) is observed to be significantly associated with COVID-19 susceptibility whereas blood group O (odds ratio, 0.65; CI, 0.59–0.71; p < 0.001) and AB (odds ratio, 0.66; CI, 0.59–0.71; p < 0.001) have low risk of COVID-19 infection. Rh+ are found to be more risk than Rh" blood group.[21] Similarly in Turkey, the prevalence of COVID-19 was higher in blood groups A, B, and AB but lower in blood group O. [18]An early report from China suggested that blood group A was associated with increased susceptibility and blood group O was associated with reduced susceptibility to SARS-CoV-2 infection.[22] Another study in Bangladesh clinical symptoms were significantly more common in patients with blood type A ($p < 0.05$) and they were more likely to die in comparison to the patients with other blood types ($p < 0.05$).[19] Subsequent studies from Italy and Spain reported that blood group A was associated with an increased risk of severe COVID-19 and blood group O was associated with a reduced risk. [23] In Lebanon COVID 19 positive groups with A Rh+ increases susceptibility to COVID 19. There was no significant relationship between COVID19 and other blood groups.[20]

In contrast a study in New York, it was estimated that Rh-negative blood type to have a protective effect for increase infection which is coincides with our study but they suggesting that increased infection prevalence among non-O types.[24] However no other study results coincide with this study as because we have highest number of cases with O positive which is identified as second common blood group among the population of Dhaka city.[24] More studies will be useful for comparing results and to understanding whether findings differ in different populations because the frequency of blood groups is variable between populations.

Individuals with blood group O positive must diligently uphold personal health hygiene measures and undergo screening test to protect themselves against COVID-19.

There are many factors, other than blood groups such as genetics, geography and viral strain that determine the contagiousness and severity of COVID 19 infection. Many of these are still unexplained. Furthermore, this study does not consider the effect of other risk factors such as comorbidity. Comorbid conditions are not evenly distributed among cases of different blood groups which may act as confounders and has chance of bias. Bigger sample size, multicenter and comprehensive prospective studies with more careful designs are needed to conduct for control confounding effect and to evaluate the independent effect of blood groups on COVID 19 infection.

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Reference Value of Platelet: Findings from a Cross Sectional Study of Dhaka adult population

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Abstract

Introduction: *Platelet count is a common hematological parameter assessed in laboratory and also an important tool for clinical management of patients. Reference value being used in most laboratories in our country, has been provided from the reference value of developed countries. Platelet count varies usually due to age, sex, ethnic origin, dietary habits, socioeconomic status and environmental factor. Therefore, there is a need to establish reference value of platelet for healthy Bangladeshi population. This study was carried out to establish the reference value of platelet of healthy adult population of Dhaka.*

Methods: *A cross sectional study was conducted in the department of Physiology, Dhaka Medical College, Dhaka from July 2017 to June 2018. A total number of 500 healthy subjects from different areas of Dhaka city were selected on the basis of inclusion and exclusion criteria. Platelet count was estimated in the Department of Laboratory Medicine, Dhaka Medical College hospital, Dhaka. For statistical analysis, the reference value was calculated as 2.5th percentile for the lower reference limit and 97.5th percentile for the upper reference limit using SPSS windows version 19.0.*

Results: *The reference values (2.5th percentile- 95th percentile) of platelet count for male & female were 100 – 406 ×103/µl and 123 – 436 ×103/µl respectively. The mean of platelet count was significantly higher in females than male (P <0.001).*

Conclusions: *The reference value of platelet count obtained from this study is lower than practiced reference value and supports the need for nationwide study to establish our population specific hematological parameters.*

Key wards: *Reference value, Hematological parameter, Platelet count*

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Introduction:

Platelets, the smallest circulating blood cells, are produced in the bone marrow and play a crucial role in hemostasis and also have some extra-hemostatic function.[1] An adequate supply of circulating platelets is essential to maintain vascular integrity and to facilitate thrombus formation at sites of vascular injury.[2]

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About thirty years ago, the coulter principle was used to study several thousands of blood samples of unselected donors to define the reference value of platelet count as 150-450 or 150-400x10^9/L.[3] Some recent studies have shown differences in platelet counts by ethnicity, sex and age and these differences could not be explained by environmental factors or illness.[4,5] Platelet being higher in women than in men and in youth than old age,[6] suggesting that the development of reference values for each area may be beneficial for improving the quality of health care.

Currently total platelet count is of great interest in Bangladesh due to Dengue fever. The reference value usually used is that of developed countries and therefore may not be applicable for our country.[7] Inappropriate reference range can cause unnecessary follow up

investigations, treatment and mismanagement of patients.[8] This study aims to determine the reference values of platelet in a sample of Bangladeshi population.

Methods:

This cross-sectional study was conducted in Physiology department of Dhaka Medical College, Dhaka from July 2017 to June 2018.The research work was carried out after obtaining ethical clearance from concerned department and Ethical Review Committee of Dhaka Medical College, Dhaka. A total number of 500 apparently healthy male and female from Dhaka city with the age ranging from 18-45 years & BMI 18.5 to < 30 kg/m^2 were included in this study. All the subjects were free from anemia, hypertension, diabetes mellitus, chronic kidney disease, COPD, liver disease, malignancy, mal-absorption syndrome. The nature, purpose and benefits of the study were explained to each of the subjects in details. They were encouraged to participate voluntarily. Informed written consent was taken from the participants. Detailed family and medical history were taken. Anthropometric measurements of the subjects were done and blood pressure was measured. All the information was recorded in predefined data schedule. With aseptic precaution, 3ml of venous blood was collected from ante-cubital vein. Blood samples were analyzed by Automated Hematology Analyzer [9] in the Laboratory Medicine department of Dhaka Medical College Hospital, Dhaka. The data were analyzed by a computer based statistical program (SPSS version 19.0). The quantitative variables were expressed in mean ± standard deviation and the qualitative variables were expressed in number and percentage. According to CLSI guideline, reference interval is calculated at 2.5th percentile for the lower reference limit and 97.5th percentile for the upper reference limit. Reference values were determined separately for male and female.

Results:

General characteristics of the study subjects are presented in table 1. Among the study subjects 313 were male & 167 were female with mean age 29.8±7.6 years.

Table I

General characteristics of the study subjects (N=500)

Demographic variable	Frequency	Percentage	Mean± SD
Age (Years)			29.8±7.6
18-25	145	29	
26-35	243	48.6	
36-45	112	22.4	
Sex			
Male	313	62.6	
Female	187	37.4	
BMI (kg/m^2)			23.8 2.6
Underweight	7	1.4	
Normal	332	66.4	
Overweight	154	30.8	
Obese	7	1.4	
Blood pressure (mm of Hg)			
Systolic BP			112.99.8
Diastolic BP			72.69.1
Occupation			
Service	227	45.4	
Business	54	10.8	
Housewife	47	9.4	
Others	172	34.4	
Educational status			
Primary	113	113	
Secondary	77	77	
Higher secondary	140	140	
Graduation & above	166	166	

The quantitative variables were expressed in mean ± standard deviation and the qualitative variables were expressed in number and percentage. N= Total number of study subjects.

Table II

Platelet count in different age group of study population

Age group (year)	Platelet (×10^3/µl) Mean (95% CI)	Median (2.5th to 97.5th percentile range)
18-25	258(244-271)	253(95-505)
26-35	255(244-264)	250(210-502)
36-45	244(233-254)	249(67-493)

Table-III

Platelet counts in male and female of study population

Parameter	Males (n=313) Reference interval (2.5th – 97.5th percentile)	Females (n=187) Mean±SD	Reference interval (2.5th – 97.5th percentile)	Mean±SD	p-value
Platelet (×10^3/µl)	100 - 406	243 ± 64	123 - 436	283 ± 77	**<0.001^s**

The reference range of platelet count in adult Bangladeshi male was 100 – 406 $\times 10^3/\mu l$ with a mean of 243 ±64 $\times 10^3/\mu l$ and in adult Bangladeshi female was 123 – 436 $\times 10^3/\mu l$ with a mean of 283± 77 $\times 10^3/\mu l$. The mean of platelet count was significantly higher in females than male ($P < 0.001$) as shown in table III.

Discussion:

In this study, we aimed to establish the reference values of platelet for Bangladeshi adults living in Dhaka city. For determination of total count of platelets we used Automated Penta DX Nexus (Horiba Medical) hematology analyzer, Kyto, Japan. According to the National Committee for clinical laboratory standards (NCCLS), International federation of Clinical Chemistry (IFCC) and Clinical laboratory Standards Institute (CLSI) Guideline, a minimum number of 120 subjects from each group of male and female should be selected to establish a reference value.[7]

Here, we included 500 apparently healthy adults of which 313 are male and 187 are female with age ranging from 18 to 45 years and mean age 29.8±7.6 years. In our study, the mean platelet concentration was 243±64 × $10^3/\mu l$ and 283±77×$10^3/\mu l$ for male and female respectively. Similar platelet concentration for male and female was found in Korea (244×$10^3/\mu l$ and 260×$10^3/\mu l$),[10] UK[11], United state[12] and some other studies.

On the contrary, In New York, platelet count for male and female (143-432×$10^3/\mu l$ and 169-458×$10^3/\mu l$ respectively) are higher than our observation[13]. These dissimilarities may be due to difference in ethnicity and large sample size. In a study in South Tyrol, platelet count (196-473×$10^3/\mu l$) was higher than our observations.[14] This difference may be due to in different geographic areas.

We found that male had significantly lower platelet count than female and this observation agreed with other studies.[15] Some study showed that sex-related difference become relevant only after 14 years of age[6] as estradiole has been demonstrated to trigger platelet formation in megakaryocytic cells.[16]

This evidence has not been translated into clinical practice due to the lack of appropriate reference intervals, and most laboratories still use the single reference interval 150 to 450×$10^3/\mu l$ for all people.

Our study had some limitations. First, data were collected only from Dhaka city. Second, investigations were not carried out to determine healthy subjects. Third, number of male was higher than female in study population.

Conclusion:

In our study, the reference value of platelet count is lower than the reference value currently used in Bangladesh. However, a nationwide study should be carried out to establish the platelet reference value for Bangladeshi population.

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Identification of Factors for Continuation and Cause of Discontinuation of IUCD (Cu-T380A) during Postpartum and Post-Abortion Period: Experience in A Private Hospital

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Abstract

Introduction: *In Bangladesh, family planning remains one of the top priorities to achieve SDGs. The unmet need for contraception among women can be effectively fulfilled by inserting IUCD after end of a pregnancy state. The acceptance and continuation of IUCD is influenced by different factors. The objective was to study demography of IUCD user, side effects or complaints of clients and frequency of discontinuation of use.*

Methods: *A prospective study was conducted in a private hospital from April'2016 to March'2018. All couples, who attended there for pregnancy termination (delivery or abortion), and wants contraception, but had no contraindication, were counseled to take "Cu-T380A". Those who took Cu-T were monitored and followed up for one year regarding any complaints, continued or discontinued.*

Results: *Among 218 women, who were counseled to take Cu-T380A, 113 were postpartum and 105 were post-abortion. The factors identifial by the couples for continuation were its long acting criteria, no hormonal exposure, convenient, and highly effectiveness. In around three forth women there was no complaint and only one forth has some adverse effects. Most of which were resolve by counseling and/or medication, but in 3.54% and 4.76% cases respectively in postpartum and post-abortion women needed removal. Complaints in postpartum women were Cramp like pain 20.35%, any shorts of menstrual abnormality 17.69%, coital problem from husband 3.53%, displaced CuT 1.76%, signs of PID 0.88%. Post-abortion women complaints of menstrual abnormality 20.95%, cramp like pain 23.80%, coital problem from husband 5.71%. The causes for discontinuation were expulsion, menorrhagia and coital problem in postpartum insertion and wished new pregnancy, menstrual disorder, coital problem and lower abdominal pain with per-vaginal excessive discharge were for removal in post-abortion case.*

Conclusion: *Cramp like abdominal pain and menstrual problems are the major side effects in both postpartum and post-abortion Cu-T insertion.*

Key words: *Contraceptive methods, IUCD (Cu-T380A), Post-partum period, Post-abortion period*

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Introduction:

Contraceptive use plays an important role in minimizing unintended pregnancies, reduce maternal mortality, and improve child survival, and thus, an important contributor in achieving SDG goals. Desire for smaller family, planned-timed pregnancy and birth spacing has increased dramatically in developing countries now a day. Copper IUDs are the most commonly used type of IUD and the Cu T 380A has been found to be most effective IUD.[1] It is a highly effective, safe, private, long acting, coitus independent and rapidly reversible method of contraception with fewer side effects.[2] But discontinuation rates are very high for all family planning methods in Bangladesh- according to Bangladesh Demographic and Health Survey (BDHS).[3] About half of Bangladeshi couples

discontinue their family planning method within one year, a rate much higher than in other countries in the Asian region.

During antenatal period it is easy to motivate a woman to delay next pregnancy and sometime a chance to counsel about contraception. So, after a pregnancy termination we can have an opportunity to suggest a long acting reversible contraceptive, preventing all the health hazards related to unexpected conception and have no chance of continuing an accidental pregnancy. Half of all unintended pregnancies in developing countries are terminated[4], most of which are carried out in illegal or unsafe circumstances with consequent morbidities or mortality. Moreover, children born from pregnancies that are reported as "unwanted," as well as those who are born after short birth intervals, may risk developmental and psychosocial delays as well as growth challenges.[5,6,7] Addressing this situation a postplacental or a postabortion long acting contraceptive Cu-T380A is a time demanding. We try to find out the cause of pre term removal of CuT and then ensure its continuation and get all the benefits.

The aim of this study was to evaluate demography of users, why they continue IUCD, and what made them to remove CuT380A in both postpartum and post-abortion insertion.

Methods:

A hospital based longitudinal type of descriptive study was conducted in a maternity clinic from April'2016 to March'2018 and 231 women were included in this study. All couple, who attended the maternity for termination of pregnancy (delivery or abortion) and needed contraception, were counseled and motivated to take contraceptive. Those who were motivated to take IUCD, were counseled regarding advantages, limitations, effectiveness and side effects related to Cu-T380A. Then their query were asked and answered. Those couples who chose the method were also informed about Cu-T380A, where to place, how to insert, there mode of action, how long they can work, what are the side effects, if any problem what to do and when to discontinue or remove, and how to follow up. Every woman was screened for clinical situations as per WHO medical eligibility criteria.

Women in immediate post placental period (within 10 minutes of placental expulsion), immediate post-partum period (<48 hours after delivery) or during caesarean section or immediate post-abortion, who were convinced to take participation in the study.

Informed consent was obtained from all clients (both from husband and wife) before insertion. The PPIUD (CuT-380A) was placed within 48 hours following child birth or abortion.

Records were maintained regarding Cu-T380A insertions and services by the provider. Follow up visit at 1st month, 6th month, and 12th month after insertion was recommended and maintained. A counselor was present to counsel all the clients during antenatal period, just after termination of pregnancy, and during follow up. She also rings the clients in interval and also those who did not came for follow up regularly. During the follow up visit the women were asked if they had any complaints and a speculum examination was performed to assess if the IUD strings have descended into the vagina. In a few women in whom strings were not visible in vagina, ultrasonography was done to confirm the intrauterine position of IUD. Findings of the follow up visits were recorded in all clients including expulsion, menstrual disturbances, pelvic pain, removal, incidence of infection and other side effects.

A questionnaire was developed for interviewing the study group during postpartum and post-abortion period and during follow up. Every client was monitored for one year to find out their adherence, compliance, any side effect that might have developed, and ultimately continuation of their contraception or not. The factors that the women considered for continuation were identified, side effects are asked and recorded and if not want to continue the method then reason behind was also recorded.

Results:

Total 231 women were included for inserting Cu-T380A, but follow up was compliance in 218 clients. Of 218, postpartum cases were 113 and post-abortion was 105 women).

Age distribution of them showed 32% of the cases belonged to 31 to 35 years group and 30% were in 26 to 30 years group.

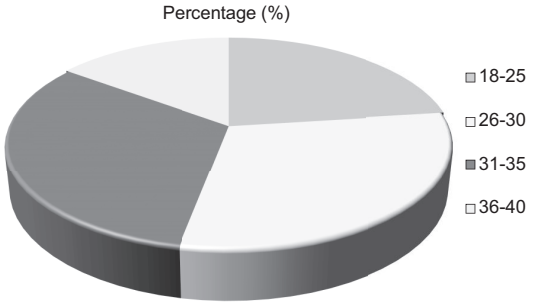

Fig.-1: *Pie chart showing age distribution*

No nulli-parous women had Cu-T inserted. Cu-T use was highest after 2nd child and declined thereafter.

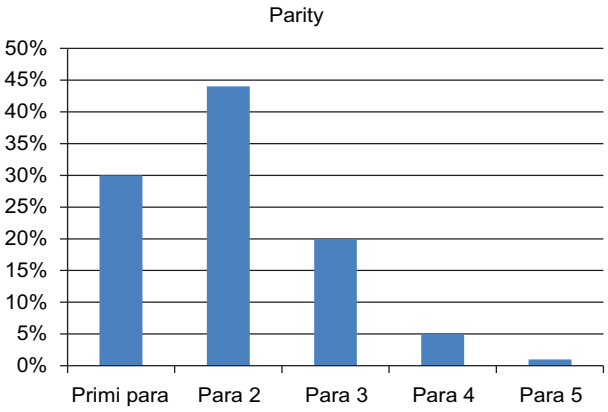

Fig.-2: *Bar diagram showing parity*

Distribution of study group according to educational level shows that, most of the couples have education above primary level.

Table-I

Distribution according to educational level

Educational distribution	Postpartum insertion	Post-abortion insertion
Up to primary	28.31%	27.61%
Up to level eight	13.27%	18.09%
S.S.C	21.38%	18.09%
H.S.C.	15.04%	23.80%
Graduation	15.04%	7.61%
Post-graduation	3.53%	4.76%

Most of the women in our study were housewife and some are service holder, which reflects the working status of women of our country.

Table-II

Distribution according to occupation

Occupation	Percentage
Housewife	65.59%
service holder	22.47%
Students	1.83%
self employed	3.66%
business women	6.42%

Every method has its own benefits and side effects. In this study the main side effects of CuT we found are menstrual abnormality and cramp like pain.

Table III

Side effects express by study group

Complains	In postpartum insertion	In post-abortion insertion
Menstrual abnormality (menorrhagia, irregular bleeding, spoting)	17.69%	20.95%
Cramp like pain	20.35%	23.80%
Coital problem from husband	3.53%	5.71%
Signs of PID	0.88%	-
Displaced	1.76%	-

We find out that discontinuation rate is less when we counsel both the partners.

Table IV

Frequency of continuation and discontinuation in the study group

Method	Continued	Discontinued
Postpartum	96.46%	3.54%
Post-abortion	95.23%	4.76%

Those who did not continued these methods, do it on an average after 2.75 months in postpartum insertion and 7 months in post-abortion insertion.

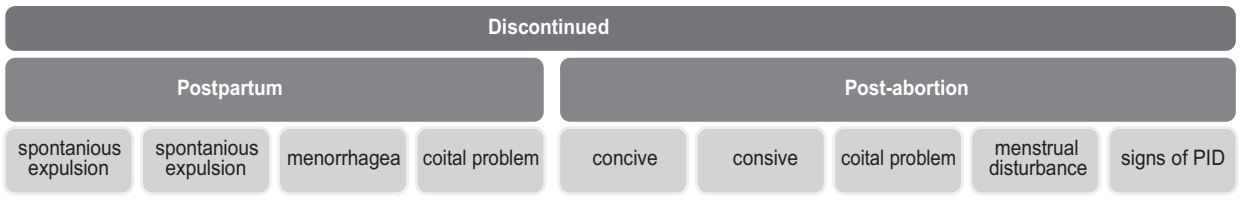

Fig .-3: *Smart art showing causes of discontinuation found in the study group*

Discussion:

The objective of an ideal contraceptive counseling is to Help couples understand their risk of unplanned pregnancy and ensuring that high quality postpartum family planning services are available to them. IUD insertion after termination of pregnancy provides a good opportunity to achieve long term contraception with minimal discomfort to the woman.

Majority of participants accepted the method when they were given information after hospital admission and just before the method given. Those patients who were willing to accept during the antenatal care and counseling become reluctant later on as they were more exposed to rumors and myths regarding Cu-T. A randomized prospective study found that some women received information on contraception in antenatal care and some did not, found no difference in subsequent contraceptive use.[8] Many studies have shown that when the husband is involved in counseling and decision making the acceptance and continuation rates were higher.

Age distribution of women showed majority 32% and 30% belongs to age group 31 to 35 and 26 to 30 years respectively. Age wasn2 t significantly associated with Cu T acceptance or discontinuation rate.

No nulli-parous women had Cu-T inserted. Cu-T use was highest after 2nd child and declined thereafter. Similar findings were also noted by Duolao Wang *et al*.[9]

The main side effects of Copper containing IUD usage are prolonged or excessive bleeding, irregular bleeding and abdominal pain. In present study 17.69% and 20.95% women had menstrual disturbances and 20.35% and 23.80% women had pain in lower abdomen respectively in postpartum and post-abortion insertion. These findings suggest that there is room for strengthening IUCD counseling services, particularly regarding normal side effects and complications that arise from method use. In my study there was one case of vaginal discharge and infection in postpartum insertion. A limitation of the present study is that, infection was based on self report and examination findings, not corroborated by medical records or microbiological confirmation. In a study it was found that using Cu T 200 B in immediate post-partum period, 27.23% women were found to have heavy bleeding during menstruation.[10] Neither of the women in their study complained of pain in lower abdomen or abnormal vaginal discharge nor did any of them had any sign of PID.

A study reported postabortion follow-up rates varying from 35% to 60%.[11] We investigated the 1st, 6th and 12th months out comes and, in our study, follow up rate was 84.95% at 6 months. Another study also showed high rates of continuation and satisfaction among women who had undergone immediate post-abortion IUD insertion; 72.9% women reported continuing the IUD after one year.[12]

The outcome of postpartum insertion of IUD at different time interval was compared during postpartum period. The evidence demonstrated complications among women who had an postpartum IUD inserted had less complications then interval insertion. [13] In current study when comprise done between postpartum and post-abortion insertion, result didn't vary much.

In my study we found two cases of missing strings or displaced device with postpartum IUD insertion, but none with post-abortion insertion. However ultrasound done in both of them and found the device in-situ and counseling and reassurance encouraged them to continue with the device.

In our study removal was done in 3.54% and 4.76% respectively in postpartum and post-abortion women. The causes for discontinuation were expulsion, menorrhagia and coital problem in postpartum insertion and in post-abortion insertion causes were wants new pregnancy, menstrual disorder, coital problem and lower abdominal pain with per-vaginal excessive discharge. In a study the authors used Multiload Cu 380A immediately after vaginal delivery and caesarean section. The expulsion/removal rate was 14.8% among the subjects in vaginal delivery group, but there were 3.8% expulsions in those submitted to caesarean section.[14] In my study also discontinuation rate was more in IUD insertion after abortion (4.76%) as compared to after delivery insertion (3.54%). We found only one case of spontaneous expulsion in postpartum insertion. Two large (n=3,704) WHO studies were conducted, the first related to immediate IUD insertion after first-trimester surgical termination of pregnancy and the second after dilatation and curettage for miscarriage. For both the trials, the expulsion rates at 24 months varied from 4.4% to 13.2% and the continuation rates at 12 months from 54% to 63%.[15,16]

Conclusion:

Use of IUCD was high in 26 to 35 years age group and the users were mostly multiparas. IUCD use is low in graduate and postgraduate women. Most of the user were housewife showing the normal cultural history of our country.

Menstrual abnormality and cramp like abdominal pain were the major adverse effects experienced by the study group.

Most of the study group continued IUCD successfully with very low rate of discontinuation.

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ORIGINAL ARTICLE

Observation of HbA1c as a Potential Predictor of Perinatal Outcome in Pregnancy with Diabetes in a Tertiary Care Hospital of Bangladesh

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Abstract

Introduction: *Diabetes Mellitus poses substantial risk for the mother and fetus during pregnancy. Glycosylated HbA1c is increased in chronic hyperglycemia and co-relates closely with an increased risk of fetal and neonatal complications. The present study was undertaken to determine the association of maternal serum HbA1c level with perinatal outcome.*

Methods: *It was a prospective observational study carried out in the department of Obstetrics and Gynaecology in BIRDEM Hospital during the period of January 2019 to December 2019. During this study period, 100 pregnant patients with diabetes who attended or were admitted at BIRDEM Hospital were randomly selected. Estimation of serum HbA1c level was done in all patients in each trimester. From each patient 5 cc blood was taken and HbA1c level was measured by high performance liquid chromatography (HPLC). HbA1c level <6.5% was considered as normal. The perinatal outcomes were studied.*

Results: *In this study serum HbA1c level was found raised in 83% of study subjects. Neonatal complications were higher in study subjects with uncontrolled HbA1c level. Among the complications in uncontrolled group the highest incidence was of neonatal hypoglycaemia (69.6%), followed by hyperbilirubinaemia (60.9%), RDS (21.7%), birth asphyxia (21.7%) and septicemia (10.9%). Perinatal mortality was significantly higher among women who had uncontrolled diabetes (44.6% vs. 11.8%).*

Conclusion: *There is increasing evidence that raised level of maternal serum HbA1c in antenatal period is associated with neonatal complications and by measuring HbA1c level in each trimester, good glycaemic control in diabetic pregnancy can be achieved which can avoid these complications.*

Keywords: *Diabetes, Perinatal outcome, HbA1c*

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Introduction:

Diabetes Mellitus is an important medical disorder in pregnancy, which creates substantial risk for the mother and fetus during current pregnancy and it also has serious implication for their long time well being.[1] Pregnancy and preconception period are of particular importance to women with diabetes as pregnancy puts challenges to the metabolic management in diabetes and, at the same time it increases the risk of diabetes related complications in fetus and neonates. It increases incidence of caesarian section, traumatic vaginal delivery and later development of type 2 diabetes. It also increases the risk of the fetus for abortion, still birth congenital anomalies, macrosomia, and other neonatal problems (e.g. hypoglycaemia, hypocalcaemia, hyperbilirubinaemia and polycythemia). In the long run the baby may develop obesity, diabetes and neurological problems.[2] The discovery of glycosylated Hb has opened a new horizon in all aspects of diabetic research and management.[3] HbA is the major component of adult Hb, comprising approximately 90% of total Hb. This Hb when combines with glucose becomes glycosylated (HbA1c). This glycosylated Hb (HbA1c) are negatively charged and thus migrate quickly than HbA on

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cation exchange chromatography. Glycosylated Hb is increased in diabetes as a consequence of chronic hyperglycaemia[4, 5] and co-relates closely with the blood level and urinary excretion of glucose[6, 7]. Poor glycaemic control is associated with an increased risk of fetal and neonatal complications, suggesting that strict glycaemic control may reduce the rate of fetal and neonatal morbidity.[8] Birth asphyxia and perinatal death showed significant reduction in tight control HbA1c level in previous studies.[9] Glycosylated Hb levels were higher in the spontaneous preterm delivery group in another study.[10] Between 18 and 24 weeks HbA1c was significantly higher in women who delivered large for gestational age (LGA) infants in another one.[11] There is increasing evidence that raised level of maternal serum HbA1c in antenatal period can cause a number of fetal and neonatal complications.[12] HbA1cis proved to be a useful indicator of average long term blood glucose level in diabetic and non pregnant subjects.[13] So by measuring HbA1c in each trimester, blood sugar control can be evaluated. Thus, adequate screening, strict control of hyperglycaemia and careful planning for pregnant diabetic women would ensure a happy outcome. We had undertaken this study to see the fetal outcome in diabetic pregnancy in case of controlled and uncontrolled serum HbA1c level. This study was done to determine the association of maternal serum HbA1c level with perinatal outcome

Methods:

It was a prospective observational study carried out from September 2006 to August 2007 in Department of Obstetrics and Gynaecology at Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic disorder (BIRDEM), Dhaka, Bangladseh. Hundred pregnant women with diabetes mellitus, who attended or were admitted to BIRDEM Hospital during the study period were randomly selected. Pregnant women with preexisting diabetes and with gestational diabetes both were included in this study. Gestational diabetes mellitus (GDM) is defined as any degree of glucose intolerance with onset or first recognition during pregnancy.[14]

Multiple pregnancy, pregnancy with other metabolic disorders, heart disease, chronic hypertension were excluded from this study. The variables included in the study were age, status of glycaemic control, fetal complications and neonatal complications. Data collection sheet was formed which included all the variables of interest. Purpose and procedure of the study were discussed with the patients who fulfilled the inclusion criteria. All the variables of interest were collected from history, clinical examination and biochemical investigations and were recorded on the predesigned data collection sheet. Pregnancy was dated by ultrasonography between 6-10 weeks. Some patients were managed initially only by dietary advice and some needed injection Insulin also. From each patient 5 c.c. venous blood was taken and HbA1c was measured by high performance liquid chromatography (HPLC) in each trimester of pregnancy. HbA1c level of 6.5% was considered as normal.[15, 16] Prior to the study ethical clearance was taken from appropriate authority. Informed written consent from patients were duly taken.

Data were processed and analyzed by SPSS 20 version.

Results:

Mean (± SD) age of the study subjects was 29.77 (±4.52) years and most of the subjects were in the 26-30 years age group (Table I). Age range was 20-38 years in study group.

Table I

Age distribution of the study subjects (n = 100)

Age (in years)	Frequency	Percentage
20-25	12	12
26-30	48	48
31-35	26	26
>35	14	14
Mean ± SD	29.77±4.52	

Table II shows the status of glycaemic control in 2ndand 3rd trimester in which 17% women had controlled HbA1c level whereas 83% of women had uncontrolled HbA1c.

Table II

Status of glycaemic control in late trimester of pregnancy in respect with HbA1c level (n = 100)

HbA1c level	Frequency	Percentage
Controlled	17	17
Uncontrolled	83	83

After performing univariate logistic regression test it was found that there is 6 times increased risk of perinatal mortality among women who have uncontrolled diabetes. This is statistically significant ($p < 0.05$)(Table III).

Table III

Association of glycaemic control of diabetic mothers and neonatal mortality

Neonatal mortality	Controlled HbA1c (n=17)	Uncontrolled HbA1c (n=83)	Crude OR (95% CI)	p value
Survived	15 (88.2%)	46 (55.4%)	6.03 (1.3,28.1)	< 0.05
Expired	2 (11.8%)	37(44.6%)		

Table IV shows that regarding septicaemia and birth asphyxia there is no significant difference between two groups but hyperbilirubinaemiaand hypoglycemia of the newborn were significantly higher in uncontrolled group.

Table IV

Association of neonatal morbiditywith controlled and uncontrolled diabetic mothers

Variables		Controlled HbA1c(n=15)		Uncontrolled HbA1c(n=46)		$\chi 2$	* p value
RDS	Present	0	0	10	21.7	3.9	NS
	Absent	15	100	36	78.3		
Septicaemia	Present	1	6.7	5	10.9	0.23	> 0.05
	Absent	14	93.3	41	89.1		
Birth asphyxia	Present	1	6.7	10	21.7	1.74	> 0.05
	Absent	14	93.3	36	78.3		
Bilirubin	Normal	13	86.7	18	39.1	10.23	<0.002
	Hyperbilirubinaemia	2	13.3	28	60.9		
Blood sugar	Hypoglycemia	1	6.7	32	69.6	18.02	<0.001
	Normal	14	93.3	14	30.4		

* Chi-square test was done

* p value < 0.05was considered as the level of significance

There is a positive correlation between raised HbA1c and increasing birth weight and it is statistically significant (p < 0.05)(Table V).

Table-V

Correlation between HbA1c and birth weight

Variable	r	p
Birth weight	0.208	<0.05

* Pearson's correlation test was done

* p value < 0.05was considered as lowest level of significance

Discussion:

Proper screening, diagnosis and management of diabetes in pregnancy can reduce fetal as well as neonatal morbidity and mortality.[8] Diabetes and pregnancy may mutually affect each other over a range of interaction from conception to delivery, and possibly even later.[14] This study was done to evaluate the fetal and neonatal outcome in pregnant women with controlled and uncontrolled diabetes.

The higher incidence of neonatal hypoglycaemia was in uncontrolled group and was found in agreement with the study done by Deorary et al.[17] This incidence is similar with the incidence of Agrawal et al. and Majed et al.[18, 19] Where as in the study of Ferrara et al, the incidence of hypoglycemia is very high, but the study population is also large.[20] The incidence of hypoglycemia is also coincides with the study of Das et al.[21]

The incidence of hyperbilirubinaemia (60.9%) among uncontrolled HbA1c group was higher than the study done by Deorary et al. (26 %)[17], Abdulrahman M. et al[22].

Birth asphyxia and neonatal septicaemiawere high among women who have uncontrolled blood sugar but statistically not significant. These findings also coincide with the findings of Deodary et al,[17] Brooket et al[23] .The incidence of birth asphyxia in uncontrolled HbA1c group was 21% which was almost similar to the study done by Deorary et al.[17]

The incidence of macrosomia in uncontrolled HbA1c group was higher than and this is statistically significant. This finding is similar to the finding, study done by Beard et al.[24] Risk of neonatal mortality is 6 times higher among uncontrolled diabetic women in the present study which is statistically significant and similar to the study of Vitoras et al[25] Ferrara et al[20].

Diabetes Mellitus in pregnancy is one of the leading cause of fetal and neonatal morbidity and mortality. But it is preventable by controlling blood sugar level strictly during pregnancy. There is increasing evidence that the raised level of maternal serum HbA1c in antenatal period is associated with a number of fetal and neonatal complications. By investigating HbA1c level in each trimester blood sugar control can be done, so we can predict the fetal and neonatal outcome.

The main factors that contributed to this reduction were a good control of diabetes periconceptually and throughout pregnancy. Particular attention is needed during the programmed conception, the first trimester, and the selection of the appropriate time for delivery.

Limitations of the study:

The study has few limitations as it was conducted with a small sample size and not representative of the whole country or region. More representative findings can be obtained from large sample size and in different tertiary level hospitals. Also the issue of potential variation of HbA1c levels in subjects with iron deficiency anaemia &/ or haemoglobinopathies was not addressed in this study.

Conflict of interest: Nothing to declare.

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ORIGINAL ARTICLE

Comparative Study of Serum Calcium Level in Normal Pregnancy with That of Pregnancy Induced Hypertension in Patients Admitted in Dhaka Medical College Hospital

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Abstract

***Introduction*: Preeclampsia and eclampsia are the dominant direct obstetric causes of maternal deaths in our country (21% of maternal death) Still now, various studies are going-on in regards of the pathophysiology, effects of this condition on maternal and fetal outcome. There is a special role of serum calcium in PIH (Pregnancy Induced Hypertension), i,e calcium level usually declines in this grave situation. I have studied the serum level of calcium in a group of normal pregnant women and another group of preeclamptic women for further evaluation of this factor. This study can help us for periconceptional counseling and taking precaution against preeclampsia by calcium supplementation.**

Methods: It is a case control trial carried out in the department of Obst. And Gynae in DMCH from July 2016 to December 2017. The study included 100 cases. Among them control was 50 and cases was 50 in number. Selection criteria was 28 to 42 weeks of pregnancy with hypertension with proteinuria. Data was collected by history taking, clinical examination and relevant biochemical tests, close monitoring of different parameters between hypertensive and normotensive pregnant women.

Results: From my study I found that the mean age of the control group and case group was almost same, primigravid women were significantly more affected with preeclampsia, no significant difference between the mean gestational age and family history of preeclampsia of control and case. But one important thing that most of the women of case group had no antenatal care during their present pregnancy. Both the systolic and diastolic blood pressure and the proteinuria were significantly high in case group (though proteinuria is not an important variable in recent studies) But the important issue was that mean serum calcium level was significantly low in women of case group in comparison to control. Normotensive pregnant women: 9.40±0.66 mg/dl (range 8.1 – 10.60 mg/dl); Preeclamptic women: 6.57±0.87 mg/dl (range 5.60 – 8.00 mg/dl); P<0.01s.

Conclusion: There is a significant association between hypocalcemia and preeclampsia, which is not usually found in normotensive women. Further studies are required to investigate whether calcium supplementation can be used as a preventable measure for the development of preeclampsia.

Keywords: Pregnancy induced hypertension, Preeclampsia, Eclampsia, Serum calcium level

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Introduction:

Preeclampsia is one of the common and serious complications of pregnancy that affects both mother and the baby. It is not only common and dangerous but also unpredictable in onset and progression, and incurable except by termination of pregnancy.[1] According to the SDG goal – 3 , targets one is to reduce MMR to less than 70 per 1,00,000 live births. In Bangladesh MMR for 2017 was 173 and 21% of that caused by eclampsia.

Pregnancy – Induced Hypertension (PIH), is considered as one of the most significant health problem in human pregnancy.[2] This condition is generally recognized in the latter half of gestation and is reported to affect between 7 and 30 percent of all women.[3] It is the leading cause of

fetal growth retardation and infant morbidity associated with premature delivery.[4] It is estimate that 20 to 25 percent of total prenatal mortality is caused by pregnancy-associated hypertensive disorders.[5]

Women with Preeclampsia are at increased risk for life-threatening complications like eclampsia, pulmonary oedema, cerebral hemorrhage, acute renal failure, abruptio placenta and disseminated intravascular coagulation (DIC).[6] Several authors have reported reduced urinary excretion of calcium during preeclampsia and for several weeks prior to the onset of clinically apparent disease. In addition, abnormal intracellular calcium metabolism in platelets and red blood cells has been demonstrated in women with preeclampsia as compared with normotensive pregnant women.[7]

High calcium intake is associated with increased serum calcium levels, lower parathyroid hormone concentration and a reduction in renal calcium re-absorption – all of which act to increase urinary calcium excretion – as well as with lower blood pressure and lower rate of hypertensive disorders of pregnancy.[8-11] By the lowering serum levels of parathyroid hormone, calcium supplementation could reduce intracellular calcium concentrations in vascular smooth muscle cells, diminishing their responsiveness to pressure stimuli and, therefore, lowering blood pressure.[12] One study showed that oral calcium lowered parathyroid hormone, reduced intracellular free calcium and decreased vascular endothelin production, resulting in vasodilatation and compensatory stimulation of the rennin-angiotensin system[13]. Several epidemiological studies in pregnant women and in normotensive and hypertensive subjects consistently showed an inverse relationship between calcium intake and blood pressure.[13]

Considering the above facts, this study was carried out to analyze the serum calcium level in preeclampsia as well as in healthy pregnant normotensive women. The result might stimulate further studies to find out whether dietary or pharmacological supplementation of calcium would be effective in reducing the incidence and /or severity of preeclampsia.

General objective was to compare the serum level of calcium in preeclampsia and normal pregnant women and Specific Objectives was to determine the serum calcium level in pregnant women and in patients with Pregnancy Induced Hypertension and to compare between the two groups.

Methods:

This was a case control observational study. This study was carried out in the department of Obstetrics and Gynaecology in Dhaka Medical College Hospital (DMCH). From 1st July'2016 to 31st December'2017 (18 Months). Purposive sampling method was used to select a total number of 100 participants for the study, with 50 pregnant normotensive women (control) and 50 women suffering from preeclampsia (case) included in this study.

Sample size was calculated using following formula: - n= z2pq/d2, n=the desired sample size z= the standard normal deviate usually set at 1.96 which corresponds to the 95% confidence level, p= the proportion of the target population estimated to have a particular characteristic. Here p=0.5 (assumed 50%) q = 1-p, d = degree of accuracy desired, usually set at 0.05, Calculating the above formula same size was n = 384 (estimated sample size). It was observed that 20 to 30 patients with preeclampsia comes in DMCH in each month. The duration of study is six month and the population size is roughly estimated 130. If N is less than 10,000 the required sample size was smaller. In this case final sample estimated by using the following formula. (targeted sample size),Where nf = the desired sample size, when population is less than 10,000. n = the desired sample size, when population is more than 10,000. N = the estimate of population size. Targeted sample size = 100.

Five milliliters of venous blood were collected from each of the case of preeclampsia as well as from the control subjects (normotensive pregnant women), with a disposable syringe, by peripheral venipuncture, taking full aseptic precaution. Blood was drawn for single time from each of the study subjects. From the cases and the control pregnant women, blood samples were collected during their antenatal period. In case of blood samples were allowed to clot and serum were separated by centrifugation at 300 rpm for 5-10 minutes.

Determination of serum calcium[14] was performed by colorimetric assay with endpoint determination and sample blank by Micro flow Cell Photometer AE – 100F Erma in the Department of Biochemistry, DMCH. The principle and procedure for determination of serum calcium have been shown in Appendix – III.

The data was collected by direct visits and examinations of the patients. Data collecting tools are-

1) History taking.
2) Clinical examination and relevant biochemical tests.
3) Close monitoring and record of different parameters of hypertensive and normotensive pregnant women.

The purpose of the study was explained to all included subjects in the local language. Age was estimated in nearest full years as stated by the patients. Occupation was divided into- Housewife/student/service/others.

Socioeconomic status was categorized as low/mid/rich. Spot record of blood pressure was done in the sample groups within 24 to 28 weeks of gestations. 5ml of venous blood was aseptically collected by veni-puncture from median cubital vein and was sent to the laboratory for measurement of calcium level in the serum.

Age, Parity, Socioeconomic status, occupation, Blood pressure, Proteinuria, Perinatal outcome, Maternal outcome were the Variable measures.

Before starting the study, permission was taken from Ethical committee. The study was a non-interventional procedure. Written consent was taken from each subject. Complication that may arise (e.g. infection) during veni puncture was tried to avoid by using full aseptic precaution and sterile needle. Confidentiality was strictly maintained.

Using appropriate computer software program, data was processed. Statistical analysis was done by appropriate statistical study. A P value <0.05 was taken as minimum level of significance.

Results:

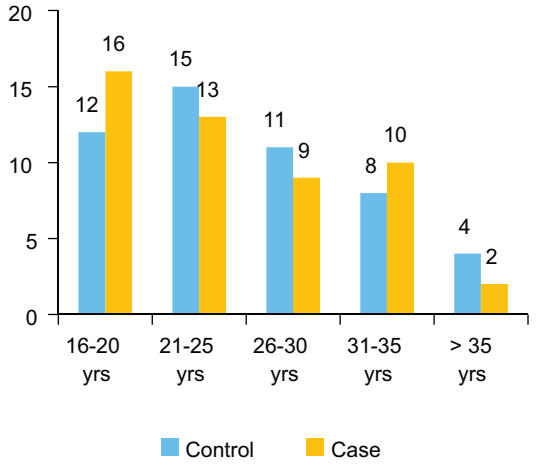

Figure 1 Shows that among the control 30% was belongs to 21-25 years age group and among the cases 32% was belongs to 16-20 years age group. In case of control mean (SD) age was 23.11± 5.9 years and for the case group mean age was (SD±) 24.5±6.3 years.

Table I shows that out of 50 control women, 22 (44%) were primigravida and 28 (56%) were multigravida, whereas in the 50 preeclamptic women (case), 35 (70%) were primigravida and 15 (30%) multigravida. Significant higher number of women were primigravida in the case group (P<0.05).

Table-I

Gravidity Distribution of the study subjects

Gravidity	Control (N=50)		Case (N=50)		P
	No.	%	No.	%	value[a]
Primi	22	(44.0)	35	(70.0)	**<0.05s**
Multi	28	(56.0)	15	(30.0)	

a = Chi – square test (χ^2)
s = Significant

Table II shows that statistically there was no significant difference between the mean (SD±) gestational age of control (35.40±2.67years) and case (34.57±3.19 years).

Table II

Gestational age of the study subjects

Group	n	Range(weeks)	Mean±SD	P value[a]
Control	50	29.0-40.0	35.40±2.67	**>0.30 ns**
Case	50	28.0-40.0	34.57±3.19	

a = Unpaired Student's t test

ns = Not significant

Table III shows that family history of hypertension was present in 14 (28%) women of control group compared to 18 (36%) of case group. The distribution was not statistically significant.

Table III

Family history of hypertension of the study subjects

Family history	Control (N=50)		Case (N=50)		P
of Hypertension	No.	%	No.	%	value[a]
Present	14	(28.0)	18	(36.0)	>0.10 ns
Absent	36	(36.0)	32	(64.0)	

a = Chi – square test (χ^2)
ns = Not significant

Table IV shows antenatal care was regular in 34(68%) vs 4(08%), irregular in 7 (14%) vs 10(20%) and none in 9 (18%) vs 36(62%) control and case group, respectively. Significantly higher number of women of case group had no antenatal care during their present pregnancy than that of control.

Table IV

Status of antenatal care of the study subjects

Antenatal care	Control (N=50)		Case (N=50)		P
	No.	%	No.	%	value[a]
Regular	34	(68.0)	04	(08.0)	<0.05 s
Irregular	07	(14.0)	10	(20.0)	
None	9	(18.0)	36	(72.0)	

a = Chi-square test (χ^2)
s = Significant

Table V shows proteinuria was found nil in all 50 (100%) women of control group. In the case group, level of Proteinuria was 2+ in 23 (46%), followed by 3+ 18 (36%) and 1+ in 9 (18%). Status of Proteinuria was found to be significantly high among women of case group than that of control.

Table V

Status of Proteinuria of the study subjects

Proteinuria	Control (N=50)		Case (N=50)		P
	No.	%	No.	%	value[a]
0 (0.1 g/L)	50	(100.0)	00	(00.0)	<0.01s
1+ (0.3 g/L)	00	(00.0)	09	(18.0)	
2+ (1.0 g/L)	00	(00.0)	23	(46.0)	
3+ (3.0 g/L)	00	(00.0)	18	(36.0)	

a = Chi – square test (χ^2)
s = Significant

Table VI shows both systolic (159.0 9.08 vs 110.9 7.05 mmHg) and diastolic (103.80 7.39 vs 74.9 5.01 mmHg) blood pressure were significantly very high among cases in comparison to control (P<0.001).

Table VI

Status of blood pressure among the study subjects

Group	n	Range (mmHg)	Mean±SD (mmHg)	P value[a]
Systolic blood pressure				
Control	50	100.0-120.0	110.9±7.05	<0.001s
Case	50	140.0-200.0	159.0±9.08	
Diastolic blood pressure				
Control	50	70.0-80.0	74.9±5.01	<0.001s
Case	50	90.0-120.0	103.80±7.39	

a = Unpaired Student's t test
s = Significant

Table VII shows that mean (SD) serum calcium level in control group was 9.40 .66 (range 8.1-10.6) mg/dl and in case group was 6.57 .87 (range 5.6-8.0) mg/dl. Mean serum calcium level was found to be significantly low in women of case group in comparison to control (P<0.01).

Table VII

Serum calcium level of the study subjects

Group	n	Range (mg/dl)	Mean±SD (mg/dl)	P value[a]
Control	50	8.1-10.6	9.40±.66	<0.01s
Case	50	5.6-8.0	6.57±.87	

a = Unpaired Student's t test
s = Significant

Discussion:

Calcium homeostasis is an important aspect of maternal and fetal physiology during gestation, since fetal bone mineralization requires adaptive adjustments in maternal calcium regulation. In the third trimester, calcium is deposited in the fetal skeleton at the rate of 200 mg/day. In addition, women double their urinary excretion of calcium in the third trimester. Recent studies have implicated alterations in calcium metabolism in the pathogenesis of hypertension during pregnancy. Deficiencies in calcium intake have been linked to Preeclampsia/Eclamsia. A hypocalciuria and deviations of levels of 1,25 – dihydroxy vitamin D and parathyroid hormone have been shown in women with Preeclampsia.This study was carried out to determine the levels of serum calcium in control (apparently healthy) and case (Preeclamptic) pregnant women as an effect of serum calcium for the development of Preeclampsia. About the parity, we have found that significantly higher number of women were primigravida than that of multigravida (P<0.05) (Table –I). This finding is consistent with the findings of Dutta[15], in which he has found the incidence of Preeclampsia in primigravida is about 10 percent and in multigravidas' 5 percent. The gestational age was studied from 28 to 40 weeks both in control and Preeclamptic women. No significant difference was found between the mean (±SD) gestational age of control than that of the Preeclamptic women (P>0.30 ns) (Table – II). No such study had been identified so far. About family history of hypertension, no significant development of preeclampsia was found (P>0.10 ns) (Table – III). This is consistent with the findings of Prenila[16], in which the author has identified it as a predisposing factor to develop Preeclampsia, but she has not mentioned

whether it is significant or not. There is a significant relation of antenatal care with the development of Preeclampsia. In our study, we have found significantly higher number of women of preeclampsia has no antenatal care during their present pregnancy than that of control (P<0.05s) (Table – IV). This is consistent with the finding of Arulkumaran and Biswas[17], in that they have found women with no risk factors prior to pregnancy become 'at risk' if they develop obstetric disorders such as ante- partum hemorrhage, pregnancy – induced hypertension or diabetes. Hence, not only initial surveillance but routine antenatal care is important to identify those at risk. The level of proteinuria in control and Preeclamptic pregnant women and status of Proteinuria was found to be significantly high among women of case group than that of control (P<0.01s) (Table – V). This is consistent with the findings of Campbell and Lees[18], in which they have identified relatively specific relation of proteinuria with Preeclampsia. The elevation of systolic and diatolic blood pressure were significantly high among cases in comparison to control (P<0.001s) (Table – VI). This is consistent with the finding of Roberts and Redman1, in which they have found in preeclampsia that there is rise of blood pressure of >15 mmHg diastolic and >30mmHg systolic from measurement in early pregnancy or to >140/ 90 mmHg in late pregnancy if no early reading is available. Main study was to find out the level of low serum calcium on Preeclampsia. The study had shown that serum calcium level was significantly low in Preeclampsia than that of control pregnant women (P<0.01s) (Table – VII). This is consistent with the finding of Hojo and August[19], in which they have found that calcium deficiency is associated with preeclampsia. Beliza et al.[20] have identified that calcium supplemented group showed a significant decrease of diastolic blood pressure, calcium intake seems to be inversely correlated with the incidence of Eclampsia and a reduction pregnancy – induced hypertension with calcium supplementation. This low serum calcium found in our study may be due to intake of diet low in calcium as the Preeclamptic women belonged to low socioeconomic classes.[21] Aruna Patel, Brijesh Singh, Arun Patel, Manoj Sharma had also found that Mild PIH is associated with significant hypocalcaemia compared to normotensive pregnant patient. Also severe PIH is associated with significant change compared to normotensive pregnancies. So, their study advocates the value of serum Ca++ a marker of pregnancy complicated by hypertension or severe pre-eclampasia.[22] In the study of Indumati V, Kodliwadmath M V and Sheela M K - a significant decrease in serum total and ionized calcium levels was seen in the normal primigravida cases as compared to the non-pregnant controls, with a further highly signifcant decrease in the PIH cases as compared to the normal pregnancy cases. This indicates an association between calcium defciency and PIH.[23] Chanvitya Punthumapol and Boonsri Kittichotpanich had also found low serum calcium level in preeclamptic patients than normal pregnant women.[24]

Conclusion:

There is a significant association between hypocalcemia and preeclampsia, which is not usually found in normotensive pregnant women. We should give routinely calcium supplementation to the Preeclamptic patients in our country at the recommended dose that is 2gm per day and ensure that they are taking it properly by regular antenatal checkup and monitoring blood pressure. This will help us to evaluate the rationality of using calcium in prevention of Preeclampsia. We have to use calcium in preconceptional period which can help to prevent preeclampsia or other hypertensive disorders in pregnancy and will reduce maternal and perinatal mortality and morbidity. More studies have to done in this respect.

Limitations of the study:

Sample size was small. Hospital stay is only for a short period due to various reasons including shortage of beds. So, all the maternal and perinatal outcome could not be estimated.

Source of funding: self

Conflict of interest: None declared

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REVIEW ARTICLE

Review on Non-alcoholic Fatty Liver Disease

ALAM A

Abstract

Non-alcoholic fatty liver disease (NAFLD) is the common public health problem. NAFLD is characterized by hepatic steatosis detected by either imaging or histology without secondary causes. It spans a spectrum of the disease from non-alcoholic fatty liver (NAFL) to non-alcoholic steatohepatitis (NASH) and ultimately to cirrhosis and its complications. Most people have a simple fatty liver with no or mild nonspecific inflammation, without liver fibrosis. Conversely, NASH, the more severe form of the disease, has varying degrees of liver fibrosis, resulting in cirrhosis and its complications. The prevalence of NAFLD in South Asian countries is high, due to several factors such as socioeconomic growth, urbanisation, westernised diet, increasingly sedentary lifestyle and poor health awareness. Bangladesh is also experiencing an increasing trend of NAFLD due to changing dietary patterns and sedentary lifestyles. Dietary recommendations and lifestyle interventions, weight loss, and the treatment of underlying metabolic syndrome remain the mainstays of therapy once the diagnosis is established. This review gives an overview of NAFLD and its treatment options.

Key words: Non-alcoholic fatty liver disease (NAFLD), Non-alcoholic steatohepatitis (NASH), Oxygen free radicals (OFR), Tumour necrosis factor-alpha (TNF-a)

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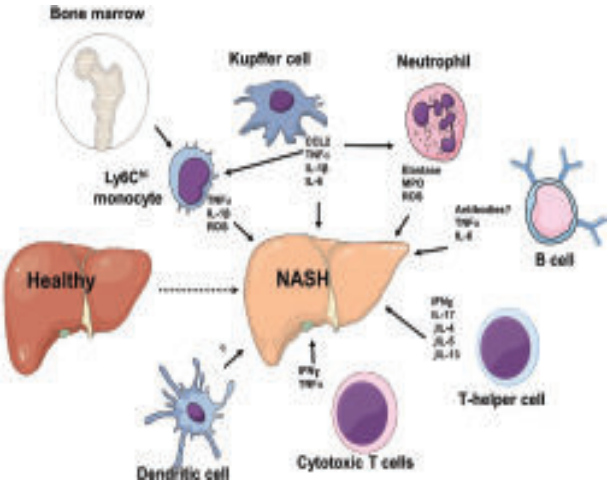
Introduction:

Non-alcoholic fatty liver disease (NAFLD) is a common cause of chronic liver disease worldwide. NAFLD is a spectrum of the disease characterized by hepatic steatosis when no other causes for secondary hepatic fat accumulation (e.g. excessive alcohol consumption) can be identified. NAFLD ranges from the more benign condition of non-alcoholic fatty liver (NAFL) to non-alcoholic steatohepatitis (NASH), which is at the more severe end of the spectrum. NAFLD may progress to fibrosis and cirrhosis.[1-2] In NAFLD, hepatic steatosis is present without evidence of inflammation, whereas in NASH, hepatic steatosis is associated with lobular inflammation and apoptosis that can lead to fibrosis and cirrhosis.[1–4]

Prevalence

The World Health Organization Global Health Observatory data in 2014 indicates that globally obesity occurs in 15% of women and 11% of men aged 18 and over.[5-6] A study evaluating the prevalence of NASH estimated that 5.7–17% of the US population is affected.[5-6] About one-third of the population of Bangladesh is affected by NAFLD.[7]



Healthy VS NASH

Causes of NAFLD

- Overweight or obesity
- Insulin resistance, in which our cells don't take up sugar in response to the hormone insulin
- High blood sugar (hyperglycemia), indicating prediabetes or type 2 diabetes

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- High levels of fats, particularly triglycerides, in the blood

These combined health problems appear to promote the deposit of fat in the liver. For some people, this excess fat acts as a toxin to liver cells, causing liver inflammation and NASH, which may lead to a buildup of scar tissue in the liver.

Risk Factors

A wide range of diseases and conditions can increase risk of NAFLD, including:

- High cholesterol
- High levels of triglycerides in the blood
- Metabolic syndrome
- Obesity, particularly when fat is concentrated in the abdomen
- Polycystic ovary syndrome
- Sleep apnea
- Type 2 diabetes
- Underactive thyroid (hypothyroidism)
- Underactive pituitary gland (hypopituitarism)

NAFLD can be divided into two distinct types. The first type of NAFLD has a narrow relationship with metabolic syndrome and the current beliefs are that insulin resistance is the primary pathophysiological mechanism. The second type of NAFLD has a relationship with infectious pathologies that can lead to the occurrence of liver steatosis. In this case infections like hepatitis C and HIV can be a cause, but it is also associated with medication (total parenteral nutrition, glucocorticoids, tamoxifen, tetracycline, amiodaron, methotrexate, valproic acid, vinyl chloride) and specific toxins or inherited/acquired metabolic diseases (e.g. lipodystrophy or cachexia or intestinal bypass surgery).[8-9]

Pathogenesis

The histological signs of NAFLD are especially characteristic in the obese population and in patients with DM-2.[10] These two conditions have been associated with peripheral insulin resistance and glucose intolerance. Dyslipidaemia, particularly hypertriglyceridaemia, is also associated with steatosis. However, despite the fact that the majority of patients are overweight and obese, NAFLD may also occur in patients with normal weight and may constitute an independent cardiovascular risk factor.[11] The pathogenic mechanism of NAFLD is associated with insulin resistance and can be explained as the 'double impact theory.[12,13] In the "first impact", the reduction in cellular capacity to respond to the action of insulin causes compensatory hyperinsulinaemia. In adipose tissue it acts on the hormone-sensitive lipase (HSL) increasing the risk of lipolysis with the consequent release of free fatty acids (FFA) to the liver. Glucose absorption decreases in the skeletal muscle, while in the hepatocyte hyperinsulinaemia increases gluconeogenesis, decreases glycogen synthesis and increases uptake of FFA, alters the transport of triglycerides such as VLDL and inhibits beta-oxidation. These alterations in the metabolism of fats are the basis of FLD. This "first impact" results from the interaction of various factors, such as hepatic resistance to leptin or the reduction of adiponectin levels, it would therefore be more correct to speak of "multiple impacts", with a predominance of one or the other, depending on the patient. The "second impact" is a consequence of oxidative stress in hepatocytes, which is initially compensated by cellular antioxidant mechanisms. However, liver overload of FFA generates oxygen free radicals (OFR) in the mitochondrial chain that act upon the fatty acids of the cell membranes causing lipid peroxidation. OFR induce proinflammatory cytokine synthesis due to Kupffer cells and hepatocytes, such as: a) tumour necrosis factor-alpha (TNF-a), which activates the caspase pathway and leads to hepatocyte apoptosis; b) transforming growth factor beta-1 (TGF-b1), which activates collagen synthesis due to stellate cells; c) Fas ligand that cause 'fratricide deaths' between adjacent hepatocytes; and d) interleukin-8 (IL-8), powerful neutrophil chemotactic. The end products of lipid peroxidation, 4-hydroxynonenal (HNE) and malondialdehyde (MDA), are also involved in the pathogenesis of liver damage due to direct toxicity, and can intervene in the formation of Mallory body and increase collagen synthesis due to stellate cells; HNE also has neutrophil chemotactic activity .[14-18] This second phase would explain the evolution necroinflammatory phenomenon, fibrosis and liver cirrhosis. [15-24]

Various studies outline other factors involved in the pathogenesis of NAFLD:

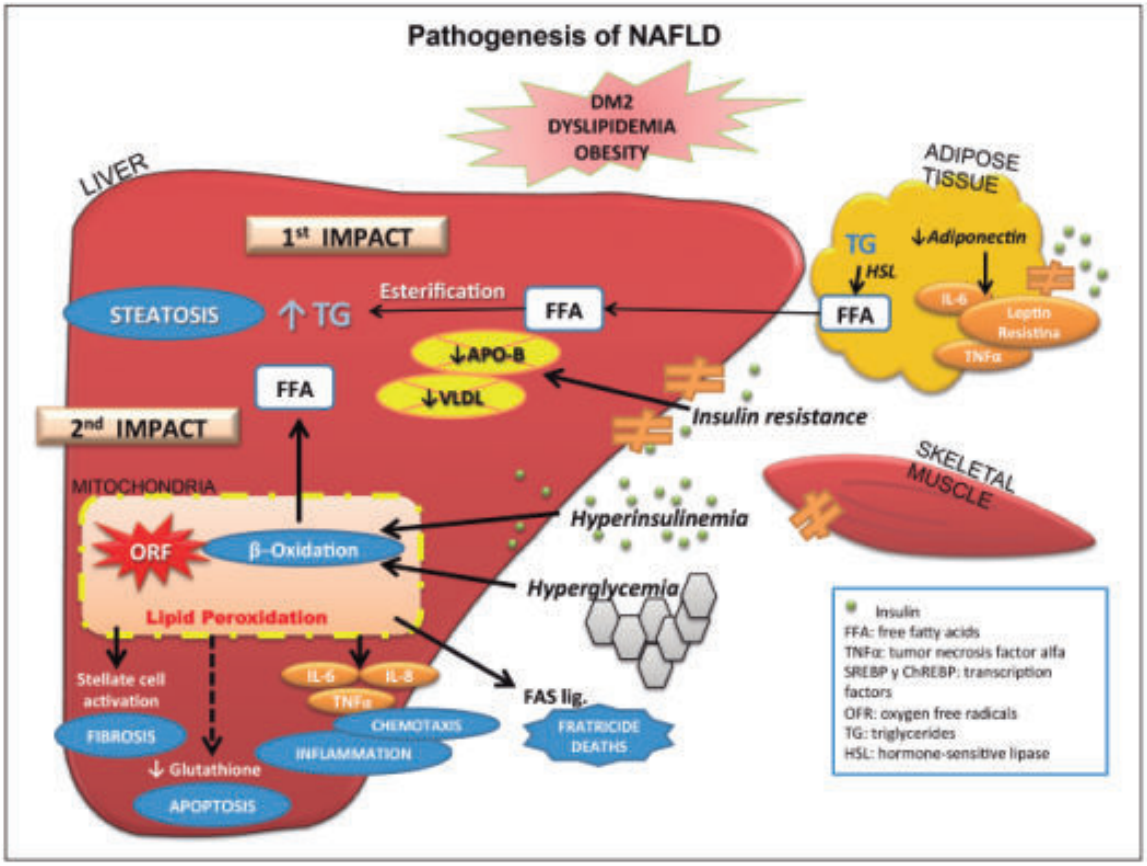
1. Insulin resistance causes elevated serum ferritin levels, increased expression of transferrin receptors and increased hepatic iron, which contributes to the generation of hydroxyl radicals and the accumulation of oxygen free radicals (OFR), however, its role in the pathogenesis of NAFLD is yet to be clarified.
2. It also involves the generation of adipokines due to adipose tissue. Due to its endocrine, paracrine and systemic effects, they behave like hormones and may play a proinflammatory role in NAFLD.
3. The role of adiponectin is widely reported due to its anti-inflammatory, ant atherosclerotic, anti-lipogenic

and hypoglycaemic effects, and also due to its protective mechanism of fatty liver development and its ability to act on stellate cells inhibiting fibro genesis. Two adiponectin receptors have been identified: type I - in the skeletal muscle and type II - in the liver, whose decrease has been associated with a greater degree of steatosis in patients with similar adiponectin levels, although there was increased expression of its receptors with NAFLD progression. Obesity (especially visceral) and being overweight have been associated with low adiponectin levels due to TNF-a inhibition - this imbalance may be one of the pathophysiological mechanisms of NAFLD and the regulation of pathways that control production and signalling may represent a promising therapeutic target. The decrease in adiponectin may be the "expression in the organ of metabolic syndrome".

4. Leptin is another cytokine whose primary resistance was described at hypothalamic level in the nuclei of satiety control, although, at present, insulin resistance is associated with peripheral leptin resistance in the skeletal muscle. In patients with NAFLD, serum leptin concentration levels are elevated and are related to the degree of steatosis. However, they are not correlated with the degree of fibrosis and do not appear to improve or reverse the problem - the "leptin resistance theory" has thus been proposed, which is associated with obesity, insulin resistance and elevated glucose levels in patients with NAFLD.

5. Bacterial overgrowth and increased bacterial translocation to portal and systemic circulation, as well as increased serum levels of lipopolysaccharide (LPS), bacteria and endotoxin and the activation of proinflammatory signalling (TNF-a and IL-6) have been observed in various chronic liver diseases including NAFLD .

6. The cannabinoid system plays a fundamental role in the pathophysiology of chronic liver disease. The positive regulation of the endocannabinoid system during chronic liver disease participates in the pathogenesis of hepatocyte necrosis, inflammation and fibrogenesis.[24]



Symptom /Sign

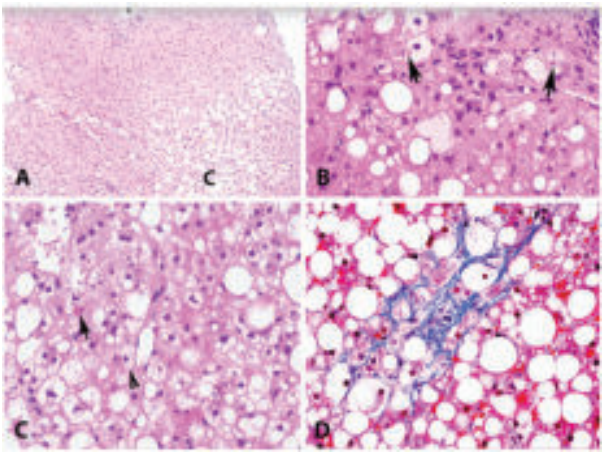
The majority of the patients with NAFLD do not experience any symptoms, however some of them may complain of fatigue, right upper quadrant discomfort, hepatomegaly, acanthosis nigricans, and lipomatosis.[25] A significant number of patients with cirrhosis can be present themselves with end-stage liver disease. In approximately 48-100% NASH canbe asymptomatic and very often it is discovered during medical evaluations for other reasons. Although clinical stigmata of chronic liver failure are rarely seen in this population, one study showed that at the time of diagnosis splenomegaly was present in 25% of the patients.[25]

Investigations

In terms of diagnostic tests, the gold standard to investigate any form of liver inflammation e.g. damage, is a liver biopsy. In the diagnosis of NAFLD and related disorders, liver biopsies can be extremely helpful and its findings can range from triglyceride deposition as droplets in the hepatocyte to more extensive forms of nonalcoholic steatohepatitis (NASH). NASH is normally characterised by lipid droplets in hepatocytes, with concomitant inflammation and a variable degree of hepatic fibrosis. In the majority of the liver steatosis patients, the disease is 'non-progressive', however a small portion of these patients develop NASH, which can lead to liver failure and even hepatocellular carcinoma.[26-27]

Evaluation of abnormal liver enzyme levels in an otherwise healthy patient can pose a challenge to even an experienced clinician. It determines asymptomatic elevation of alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels in up to 90% of cases, once other liver disease are excluded.[5-6]. When performing laboratory tests, serum markers like aminotransferases (AST, ALT), are mild to moderately elevated.[28] However, the AST and ALT levels can be specific in patients with NAFLD or related conditions. In other words, AST and ALT levels can either be elevated or normal in NAFLD.[28-30] In patients with NAFLD, ALT elevations are more common than elevations of AST. The ALT levels tend to be higher in NASH than in simple steatosis. Serum ferritin level commonly increased in patients with NAFLD, and increased transferrin saturation is found in 6–11% of patients.[28-30]

In liver diseases such as NAFLD and NASH, various imaging modalities can be used to substantiate the diagnosis, however none of them are routinely used for differentiating between (histological) subtypes of NAFLD or NASH.[31] Computed tomography (CT) scans, abdominal ultrasound (US), or Magnetic Resonance Imaging (MRI) can detect these liver diseases. Imaging findings in patients with NAFLD include increased echogenicity on ultrasound, decreased hepatic attenuation on CT, and an increased fat signal on MRI.[31]



Steatosis and steatohepatitis. A, Simple steatosis at zone 3 (P, portal tract; C, central zone). B, Steatohepatitis showing steatosis, mild lobular inflammation, and many classic ballooned hepatocytes, some with Mallory-Denk bodies (arrows). C, Acidophilic body (arrow) and nonclassic ballooned hepatocyte (arrowhead). D, Perisinusoidal/pericellular fibrosis (hemoxylin-eosin stain, original magnifications ×100 [A] and ×400 [B and C]; trichrome stain, original magnification ×400 [D]).

Complications of NAFLD

The main complication of NAFLD and NASH is cirrhosis, which is late-stage scarring in the liver. Cirrhosis occurs in response to liver injury, such as the inflammation in NASH. As the liver tries to halt inflammation, it produces areas of scarring (fibrosis). With continued inflammation, fibrosis spreads to take up more and more liver tissue.

If the process isn't interrupted, cirrhosis can lead to:

- Fluid buildup in the abdomen (ascites)
- Swelling of veins in esophagus (esophageal varices), which can rupture and bleed
- Confusion, drowsiness and slurred speech (hepatic encephalopathy)
- Liver cancer
- End-stage liver failure, which means the liver has stopped functioning

Between 5% and 12% of people with NASH will progress to cirrhosis.

Treatment of NAFLD

To date, there is no specific drug treatment for NAFLD, however it is believed that a combination of treatment goals (lifestyle adjustments, increasing physical activity and smoking/ alcohol cessation) can be beneficial.[32-33] A high protein diet is suggested to be beneficial for NAFLD management. [34]

Other dietary components can also be beneficial in the treatment of NAFLD, like changes in Vitamin E, caffeine and polyphenol intake. Vitamin E is a fat-soluble vitamin that works as an antioxidant.[35] Current data support the use of Vitamin E in non-diabetic patients with nonalcoholic fatty liver disease. However, it should not be considered as the first option for treatment.[35]

Conclusion:

With the growing obesity pandemic and the rising prevalence of comorbid conditions like T2DM and NAFLD, the management of these patients has become even more complex. There are some treatment methods, however there is lack of high-quality studies that compared different treatment methods with each other. Considering that bariatric surgery is increasingly utilized, prospective studies answering the remaining questions on the connection of insulin resistance, fatty liver, and fibrosis progression should become available in the near future. To reduce risk of NAFLD, we have to take- a healthy plant-based diet that's rich in fruits, vegetables, whole grains and healthy fats. We have to maintain a healthy weight. If you are overweight or obese, reduce the number of calories you eat each day and get more exercise. Because prevention is better than cure.

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Use of Perforated Balloon Technique to Deliver Intracoronary Adenosine in Patient with Slow Flow/No Flow Syndrome: A Case Report

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Abstract

Coronary no-reûow (NRF) following percutaneous coronary intervention (PCI) is infrequent but one of the most serious complication which results from impaired flow of microvascular bed. It is associated with adverse outcome if flow is not restored. Several pharmacological and non-pharmacological interventions have been used to treat this situation. We will describe the use of perforated balloon (PBT) for intracoronary (IC) adenosine administration and its effects on outcome during slow flow/no flow in patient undergoing PCI in the setting of ACS. This technique enables rapid and cost-effective treatment of no-reflow phenomenon during PCI for ACS.

Keywords: No-reflow phenomenon, Percutaneous coronary intervention, Perforated balloon technique

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Introduction:

Slow flow or No-reflow is an undesirable result of percutaneous coronary interventions (PCI).[1] Intracoronary (IC) vasodilators such as verapamil, nitroprusside, or adenosine are being administered for the treatment of no-reflow via the guiding catheter, but sometimes distal flow restoration is not satisfactory especially in patients with TIMI 0 flow. Vasoactive drug administration at the distal part of the coronary artery is suggested as a treatment option for no-reflow and some distal infusion catheters and over-the-wire (OTW) balloon catheters are being used for this purpose.[2, 3, 4] However, OTW catheters need long guide wires and changing a short wire with a long wire has the risk of wire loss. Distal infusion catheters are special catheters for drug infusion at various vascular sites, but these catheters are not always available. Monorail balloon catheters are the most widely used catheters in routine clinical practice. Here, we describe one case of successful no-reflow management by previously used monorail balloon as a hand-made distal infusion catheter.

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Case report:

A 68-year-old male patient was taken to catheterization laboratory at the fourth hour of his central chest pain with the diagnosis of acute anterior STEMI. The patient was pretreated with acetylsalicylic acid 300mg, Ticagrelor 180 mg and unfractionated heparin 100 Unit/kg. Infarct related artery was left anterior descending artery (LAD), Figure 1(a). Total occlusion was crossed with a 0.014 inch Runthrough floppy wire and daughtering of the lesion was done with 2.0/20mm monorail balloon. After balloon daughtering angiogram showed TIMI II flow with good distal landing zone (Figure 1(b). Then 2.75 × 28 mm drug eluting stent (DES) was deployed, Figure 1(c). No post

dilatation was done. After stenting no-reflow developed. Intracoronary adenosine (300 mcg) was administered through guide catheter but distal flow could not be restored, Figure 1(d). Therefore we decided to give adenosine at the distal part of LAD and the previously used 2.0/20mm monorail balloon was retrieved and perforated with a needle at six different sites. The perforated balloon was flushed from the hub with adenosine solution (12 mcg/ml) and bubbles were removed, Figures 2(a) and 2(b). Adenosine solution was made by mixing 1 ample adenosine (1 ample =6 mg) in 500 ml normal saline (12 mcg/ml). Then it was injected to the distal part of the LAD and 250 mcg adenosine was injected via the balloon by inflation-deflation device. Control angiography revealed TIMI 3 flow,Figure 1(e). Then the procedure was terminated without any other complication.

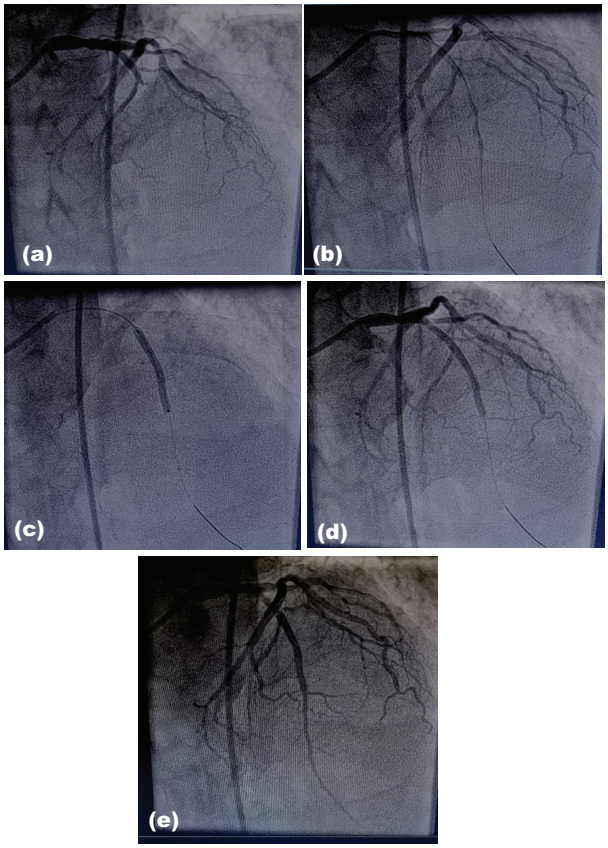

Figure 1: *(a) angiogram of the patient showing LAD was 100% blocked. (b) Runthrough floppy wire was crossed the lesion followed by balloon daughtering. (c) Direct DES was deployed in LAD (No predilatation or post dilatation was done). (d) No-reflow developed. (e) 2.0/20mm monorail balloon was perforated and was inserted to the distal part of the LAD; afterwards 250 mcg adenosine was injected via the balloon. Successful distal flow was restored.*

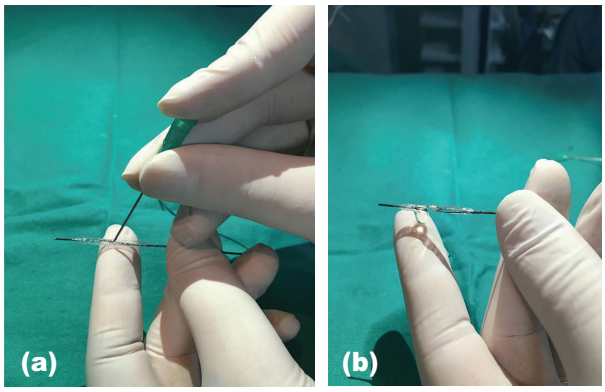

Figure 2: *Preparation of balloon before distal infusion. (a) First the balloon is filled with saline and perforated with a needle from perpendicular at 6 different sites. It is important to not cross the opposite layer of the balloon. (b) The perforated balloon is flushed from the hub with adenosine solution and the bubbles were removed.*

Discussion:

Slow flow / No-reflow increases mortality and hospital stay in acute MI patients.[5] Distal microembolization, endothelial dysfunction, and reperfusion injury (by increasing the microvascular resistance) are the proposed mechanisms of no-reflow.[6] Antiplatelet agents, thrombus aspiration, distal embolic protection devices, and vasodilator drugs can be used for prevention and treatment of no-reflow.[7] Intra coronary vasodilator administration through the guiding catheter is frequently performed to resolve no-reflow. But it is obvious that administered vasodilator agents cannot penetrate to the coronary microcirculation especially in patients with TIMI 0 flow because there is no blood flow at the distal part of the vessel. In addition, when vasodilator drug is administered by the guiding catheter, it penetrates to other coronary territories and the vasodilator drug concentration dilutes.

Administration of the vasodilator drugs at the distal part of the coronary artery can deal with these problems and vasoactive drug efficacy can be increased at the distal part of the coronary artery. OTW balloon catheters and distal infusion catheters have been used for this purpose and positive results were reported with distal vasodilator drug injection.[8, 9, 10] However these two types of catheters have some disadvantages. Distal infusion catheters (like ClearWay, Atrium Medical Corporation, Hudson, NH, USA/multifunction probing catheter, Boston Scientific Corporation, Boston, MA) are suitable for drug administration at the distal part of coronary artery, but these catheters are not routinely found in most of the cathlab. OTW balloons are not the first choices in daily

practice and need a long guidewire. Wire exchange for OTW balloon usage has the risk of wire loss and failure of rewiring, a very risky situation for the operator. Monorail balloons are frequently used in daily practice. They are easily retrievable and they can be used with short guidewires. Here, we have described successful usage of a monorail balloon for distal vasodilator drug infusion. There may be some safety concerns about inserting a perforated balloon to the distal part of the coronary and drug infusion through this balloon, but we did not encounter any complication with this method and reached successful results. Flushing the perforated balloon from the hub takes away the risk of air bubble embolism. Perforating the balloon form multiple sites reduces the risk of coronary dissection due to saline flow because injected saline's pressure is reduced by multiple holes. In addition, this method does not impose an additional cost to the procedure. Health expenditure is very important all around the world. We think that distal drug infusion with this method is safe and effective at least like other catheters; whereby use of new catheter and raising the cost of the procedure become unnecessary.

Conclusion:

Perforation of a monorail balloon with a needle and using as a distal infusion catheter can be used for no-reflow treatment. We achieved favorable results with this off-label usage. This method is always available, easy, and safe and has no additional cost.

Conflict of Interest:

The authors declare that there is no conflict of interests regarding the publication of this paper.

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Continuing Medical Education (CME)

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