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Clinical Care and Knowledge Creation: The Birth of Health Plus

It gives me immense pleasure and a profound sense of responsibility to present the inaugural issue of the Journal of BRB Hospitals Limited – Health Plus, the first medical journal of BRB Hospitals Limited. The publication of this journal marks an important milestone not only for our institution but also for the broader landscape of medical education, clinical research and healthcare development in Bangladesh. BRB Hospitals Limited is an international-standard 350-bed corporate hospital established in 2014 by BRB Group, committed to providing safe, patient-centered and environmentally sustainable healthcare. It offers multiple Centers of Excellence, including Hepatobiliary, Gastro-Liver, Mother and Child, IVF and IUI, Brain and Spine, Nephrology and Urology, Bone and Joint, ENT and Eye, Dental services etc. supported by comprehensive medical and surgical specialties, advanced diagnostics, modern technology, critical care facilities and 24-hour emergency services.

A hospital is more than a place where patients receive treatment. It is also a center of learning, innovation, inquiry and knowledge generation. Health Plus has been conceived with this philosophy—to provide a platform where the clinical experiences, research findings and academic contributions of healthcare professionals can be systematically documented, critically evaluated and shared.

The inaugural issue reflects the diverse academic interests to the healthcare professionals of our country. The original articles address several important issues from both clinical and public-health perspectives. The study on avoidable visitor problems in a tertiary-level hospital examines an often-overlooked dimension of hospital management and patient care. Evidence generated in this area can contribute to improving hospital efficiency, patient safety and the overall experience of patients and healthcare workers. The article on pre-displacement trauma among the Forcibly Displaced Myanmar Nationals (FDMNs) in Bangladesh brings attention to an important humanitarian and mental-health concern. Understanding the traumatic experiences of displaced populations is essential for developing appropriate psychosocial, mental-health and humanitarian interventions.

The study on cervical cerclage for prevention of mid-trimester miscarriage in a private hospital highlights the importance of evidence-based obstetric practice. Clinical research in obstetrics can help refine patient selection, improve outcomes and promote safer motherhood. Another original research article, comparison of mental health status between private and public medical college students, addresses an increasingly important issue in medical

education. Comparative studies such as this can help educational institutions better understand the psychological needs of their students and develop appropriate support systems.

The review article on uremic pruritus in dialysis patients addresses a common yet frequently under-recognized complication of chronic kidney disease. A comprehensive review of its pathophysiology, clinical features and management options is therefore highly relevant to nephrologists and other healthcare professionals caring for patients with end-stage kidney disease. The case report on tuberculosis of the knee joint reminds us of the continuing importance of tuberculosis in Bangladesh. Sharing unusual or diagnostically challenging cases can contribute significantly to clinical learning and help physicians maintain a high index of suspicion in similar situations.

As the first medical journal of BRB Hospitals Limited, this inaugural issue carries special significance. It represents the collective efforts of our clinicians, researchers, academic contributors, reviewers, editorial team and hospital leadership. We particularly encourage young physicians, nurses, allied health professionals and researchers to use this platform to transform their clinical observations and research ideas into scientifically meaningful contributions. Going forward, Health Plus aims to expand its scope and quality by encouraging original research, systematic and narrative reviews, case reports, clinical communications, public-health perspectives and other scholarly contributions relevant to healthcare in Bangladesh and beyond. Our ultimate objective is simple but ambitious: to contribute to better healthcare through better evidence, better learning and better practice.

I extend my sincere appreciation to all authors who have contributed to this inaugural issue and to the reviewers and members of the Editorial Board whose efforts have helped shape the journal. I also express my gratitude to the management of BRB Hospitals Limited specially the honorable Chairman and the

respected Managing Director for supporting this academic initiative.

The journey of Journal of BRB Hospitals Limited – Health Plus begins with this inaugural issue. May it grow into a respected platform for medical endowment, a source of knowledge for healthcare professionals, and a meaningful contribution to the advancement of healthcare in Bangladesh. Let this be the beginning of a culture where every clinical experience inspires a question, every question leads to research, and every research finding ultimately contributes to better care for our patients and society as a whole.

Welcome to Health Plus Journal.

Col Dr Nazmul Huda Khan (LPR)

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Journal of BRB Hospitals – Health Plus

Study on Avoidable Visitor Related Problem in a Tertiary Level Hospital

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Abstract

Objective

To find out the avoidable visitors related problem and remedial measures to be taken to reduce these problems.

Materials and methods

This descriptive cross sectional study was conducted at Bangladesh Medical University, Dhaka. Total of 350 respondents were selected purposively, out of them 150 were patients, 150 visitors and rest 50 were hospital staffs. The study was conducted in Bangladesh Medical University (BMU), Dhaka from 01 January 2007 to 30 June 2007.

Results

It was observed that an average 12218 visitors were attended their patient per day, among them 26.1% visited in visiting hours and the greater part 73.9% were visited during non-visiting hours. The mean duration of stay per visit by visitors was 2.73 hours with standard deviation + 1.55 hours. The daily average patient-visitors ratio was 1: 12.17. Out of 150 visitors, 68.7%

expressed that they were not interested to visit if necessary hospital services were provided. Majority of the hospital staffs stated that problems in respect of visitors were disorder in working atmosphere and hindrance of rest of patients. Most of the patients' opined disturbance in rest and privacy were the foremost problems. According to opinion of all the groups of respondents 57.1% opined improving nursing care might be the main counteractive measure for visitors problem, 21.1% stated supply of medicine, 12.7% affirmed control of visitors in non-visiting hours as the remedial measures, 7.4% stated supply of food as remedy to control visitors.

Conclusion

Excess numbers of visitors make hospital premises unclean, unhygienic and dirty. Hospital infection rate increases with the increased numbers of visitors. Too many visitors in the ward tire or bore their own patients and hampers sleep, rest and privacy of other patients. Considering socio-cultural aspect of community, visitors cannot be blocked in Bangladesh situation, restriction should be enforced reasonably and courteously.

Key Words: Avoidable visitors' related problem, remedial measures, tertiary level hospital.

Introduction

On top handling of the patient, the hospital has to deal with a highly sensitive third group of people who are always associated with the patient in the hospital, the visitors. Visitors includes persons coming to hospital for various purposes such as to accompanying patient to provide un-available medicine, supply of food, to provide moral and psychological support, to maintain social custom and for some other reasons. As such they cannot be denied access to the hospital.¹

Visitors related problems in hospital are a day to day burning and sensitive issue which should be managed very carefully. Hospital is a complex and highly visible organization. An administrator cannot strictly prohibit the visitors but some measures should be taken to reduce the number of unnecessary visitors. Hospital authority is obliged to provide safe premises for the patient. Prevent needless visitors might be a responsibility of the hospital authority.²

Regardless of many directives and recommendations that have been made by the different hospital authorities at different time in different situations and place the number of visitors that should be allowed in hospitals, there are still great deal of variations in between the amount of visitors visiting the hospitals and that are essentially allowed. Nevertheless, the problem pertaining to visitors is an immense sensational issue and it should be given a from end to end, solicitous, and adequate resolution with due concern to the sentiments and communal need of patients and visitors.

Hospitals, now a days are an integral part of the community. To serve the community it must take into account the patients as well as the visitors of the patients. It is difficult for a hospital to run efficiently without appropriate support of the community. But too much visitors and unsystematic visits bring about a tremendous ill effect on the hospital service.

Materials and methods

It was a descriptive type of cross sectional study. The study was conducted at Bangladesh Medical University, Dhaka, from 01 January 2007 to 30 June 2007. The study population was aged 20 years and above admitted patients of male medicines, male surgical, gynecological and obstetric wards, visitors of those patients and hospital staffs of middle and lower stratum. Purposive sampling technique was adopted in the study. Every alternate bed of each selected ward was chosen. Visitors of sample patients were interviewed through convenient sampling from the selected wards. Counting of visitors were done in all entry points of the hospital simultaneously by counting machine. Sample size for this study was 150 patients, 150 visitors and 50 hospital staffs. Structured questionnaires for patient, visitors and hospital staffs were prepared for data collection. Data were collected and recorded by the researcher from personal observation in check list and interview of the respondents by taking prior consent. Data were analyzed and corrected properly. The corrected data were entered in the computer for final analysis using SPSS 20 computer programme.

Results

A total 150 visitors were observed and interviewed for avoidable visitors related problems and socio-demographic information, like, age and occupation. Mean age of the visitors was 40.65 years with standard deviation of + 12.85 years (Range 20-78 years). Most of the patients were in the age group of 30-39 years (36.7%), followed by the the age group 40-49 years (30.7%). Out of 150 visitors were interviewed, highest 43 (28.7%) were associated to businesses, 25 (16.7%) were farmers, 24 (16.0%) were service personnel, 23 (15.3%) were housewives (Table-1).

Table-1: Socio-demographic characteristics of visitors

Characteristics	Frequency	Percentage	Mean (+ SD)
Age (years)			
20-29	22	14.7	40.65 + 12.85
30-39	55	36.7	
40-49	46	30.7	
50-59	13	8.7	
60 -69	14	9.3	
Occupation			
Student	8	5.3	
Service	24	16	
Housewife	23	15.3	
Farmer	25	16.7	
Day laborer	16	10.7	
Others	11	7.3	

Table-2: Distribution of visitors by visiting and non- visiting hours

Visit	Average number of visitors	Percentage
In visiting hours	3189	26.1
In non -visiting hours	9029	73.9
Total	12218	100

It was evident from the Table-2 that out of 12218 visitors 3189 (26.1%) visited in visiting hours and the rest 9029 (73.9%) visited in non-visiting hours.

Table-3: Distribution of duration of stay per visit by visitors (n=150)

Duration of stay by visitors (In hours)	Number of visitors	Percentage
Less than 1	36	24.0
Less than 2	47	31.3
Less than 3	26	17.3
3 to 6	17	11.3
6 to 12	11	7.3
12 to 24	13	8.7

Mean + SD = 2.73 + 1.55 hours (Range <1-24 hours)

Maximum 47 (31.3%) visitors stayed for 1-2 hours. 36 (24.0%) visitors stayed for less than 1 hour, 26 (17.3%) visitors stayed for 3 to 6 hours, 11 (7.3%) stayed for 6 to 12 hours and rest of the visitors 13 (8.7%) stayed for 12 to 24 hours.

Table-4: Distribution of ratios among patients and visitors for four days

Days of Week	Number of Patients	Number of Visitors	Patients Visitors Ratio
1 st day (Sunday)	1012	12730	1:12.58
2 nd day (Thursday)	1003	12858	1:12.82
3 rd day (Holiday)	1004	11606	1:11.56
4 th day (Friday)	997	11678	1:11.71
Total	4016	48872	1:12.17

Patients and visitors ratio were counted for four different days. In working days the ratios were 1:12.58 and 1:12.82 visitors/ patient/ day respectively. In national holiday and weekly holiday the ratios were 1:11.56 and 1:11.71 visitors/ patient/ day respectively. The average ratio was 1:12.17 visitors/ patient/ day.

Table-5: Distribution of visitors by the reasons of visits to the patients (n=150)

Reasons of visits by the visitors	Frequency	Percentage
Supply of unavailable medicines	29	19.3
Supply of food	18	12.0
Nursing care	45	30.0
Psychological support	39	26.0
Maintain social customs	19	12.7
Total	150	100.0

It was observed that mainstream of the visitors 45 (30.0%) expressed that reasons of their visits were nursing care, followed by reason of visits were psychological support 39 (26.0%). Other causes were supply of unavailable medicines opined by 29 (19.3%), maintain social customs by 19 (12.7%) and supply of food by the left over 18 (12.0%).

Table-6: Distribution of opinions of visitors to avoid visitors related problems (n=150)

Opinion of visitors to avoid visitors related problems	Frequency	Percentage
Supply all medicines from hospital	41	27.3
Supply adequate food	6	4.0
Improving nursing care	94	62.7
By enforcing regulations	5	3.3
Activating information centre	3	2.0
Improving recreational facilities	1	0.7
Total	150	100.0

More than half of the visitors among 150 visitors, 94 (62.7%) recommended that improving nursing care could reduce the number of visitors. As per views of 41 (27.3%) visitors' supply of all medicine from hospital, 6 (4.0%) supply of adequate food from the hospital and as per statement of 5 (3.3%) visitors, by enforcing regulations can reduce the visitors' related problems.

Table-7: Distribution of corrective measures to control visitors in hospital as per opinion of all respondents (n=350)

Corrective measures to control visitors	Frequency	Percentage
Improvement of nursing care	200	57.1
Supply of medicines	74	21.1
Strict regulations	44	12.7
Supply of adequate food	26	7.4
Others	6	1.7
Total	350	100.0

Distribution of corrective measures opined by all the respondents were 200 (57.1%) spoken that improvement of nursing care as counteractive measure, 74 (21.1%) opined supply of medicine, 44 (12.7%) stated strict regulations and 26 (7.4%) expressed supply of adequate food from the hospital as the corrective measures to control visitors related problems in a hospital.

Discussion

To find out visitors related problems in a hospital and corrective measures for its control, three groups of respondents were taken. They were categorized into visitors, patients and hospital staffs. Total study population comprised of 350 respondents purposively, including 150 visitors, 150 patients and 50 hospital staffs. All three groups were interviewed separately to find out the reasons of hospital visits by the visitors and the remedial measures to reduce the numbers of unnecessary visitors.

It was found in the study that in an average 12,218 numbers of visitors attended in BMU per day, during selective study days. Amongst them 3,189 (26.1%) visitors visited in visiting hours and 9,029 (73.9%) visitors visited in non-visiting hours (Table-2). In study on visitors' effect on in-patient care in Bangabandhu Sheikh Mujib Medical University conducted by Alam AS (1995)³, was found that on an average 7,934 visitors visited their patient at hospital daily. Among them 1,374 (17.3%) visited in visiting hours and 6,560 (82.7%) visited in non-visiting hours. On another study on problems related to flow of visitors and impact on hospital care service in Dhaka Medical College Hospital conducted by Mallick SH (1991)⁴, was brought about total in average 11,660 visitors attended in DMCH per day, among them 2,632 (22.6%) visited in visiting hours and 9,028 (77.4%) visitors visited their patients during non-visiting hours. Howker R (1984)⁵ stated that in 1833, new visiting

times were implemented in many hospitals of London. It was decided to restrict the numbers of visitors to 2 per patient. The reason of restriction was for good patient care. Tanner J (2005)⁶ in his writing on visiting time expressed that maximum 2 visitors could be allowed per patient during visiting hours and the duration of staying would be maximum for half an hour⁷ (Table-3).

Counting of the visitors was done for four days including two working days and two holidays from 0600 hours to 0600 hours next day in all the three entry points simultaneously. The patient-visitors ratios were estimated approximately 1:12 per patient per day, which was much higher than the internationally accepted norms (Table-4). According to Alam AS³ it was 1:12 and Mallick SH⁴ it was 1:10. Matter of fact, hospital authority neither had any record nor any perception about the estimated number of visitors visiting daily in BSMMU. Nevertheless, the ratio of patient and visitors were very far from the standard as per statement of Stone JE (1952)⁸. Generally a patient is allowed to have six visitors per day but not more than two at a time.^{9,10}

Authorized visiting time of the hospital was three hours, 1600 hours to 1900 hours for the period of summer and 1500 hours to 1800 hours for the period of winter. This study revealed that mean duration of stay per visit was 2.73 + 1.55 hours along with 150 visitors interviewed.

Bulk of the visitors 103 (68.7%) affirmed that they should not visit their patients if essential services e.g.

medicines; food and nursing care were ensured by the hospital authority. Rest of them 47 (31.3%) of the visitors opined that they should visit their patients for psychological support even though all the hospital services provided to their patients (Table-5). The findings were different in the study of Mallick SH, 81 (81.0%) opined that they should visit their patient in the hospital even after improvement of existing service due to provide psychological support. Findings were contradicted might be due to small purposive sample size and gradual change of social values and life styles of the respondents (Table-6).

It was evident from this study that out of total 350 respondents in three groups namely patients, visitors and hospital staffs maximum 211 (60.3%) respondents stated improving nursing care might be the suitable remedial measure to avoid visitors' related problems. Supply of medicine from the hospital opined 80 (22.7%) of the respondents as the most appropriate measure and 44 (12.6%) respondents in favoured of put into action strict regulations to control visitors (Table-7). Interesting fact in this study that most of the patients and visitors opined in favoured of improving nursing care but the hospital staffs opined in favoured of supply of medicines from the hospital as proper remedial measure. In the study of Mallick SH opinion of the hospital staffs in this regards revealed improvement of treatment and other hospital facilities opined by majority 66 (82.5%) out of 80 respondents as the remedial measures. Price AL (1965)¹¹ in an article on art, science and spirit of nursing stated that visiting regulations should be fully explained to the family and friends of the patients to realize its importance in recovery of the patient.

Conclusion

It was exposed from this study that patients faced problems in respect of rest, sleep and privacy due to excessive numbers of visitors in the hospital. Excess numbers of visitors make hospital premises unclean, unhygienic and dirty. Hospital infection rate may increase with the increased numbers of visitors. Too many visitors in the ward tire or bore their own patients and hampers sleep, rest and privacy of

other patients. Considering socio-cultural aspect of community, visitors cannot be blocked in Bangladesh situation, restriction should be enforced in the number of visitors visiting hospital purposelessly, reasonably and courteously.

Ethical Clearance: Ethical clearance was obtained from the appropriate Institutional Ethical Review Committee prior to conducting the study.

Conflicts of Interest: The author(s) declare that they have no conflicts of interest.

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Pre-displacement Trauma Revealed Amongst the Forcibly Displaced Myanmar Nationals (FDMNS) in Bangladesh

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Abstract

Background/Objectives

Forcibly Displaced Myanmar Nationals (FDMNs) in Bangladesh become one of the scorching issues. These people were experiencing conflict and trauma since forced displacement. This study was conducted amongst them to find out the state of pre-displacement related factors.

Materials and methods

This was a cross sectional study amongst a total 248 respondents selected from Kutupalang and Balukhali camp of Cox's Bazar district by using purposive sampling method. Data was collected by face-to-face interview through questionnaires which was developed with the help of Harvard Trauma Questionnaire Revised (HTQ-R), Part-1.

Results

The mean ($\pm$ SD) of age of the respondents was 40.38 ± 16.09 years while the range

was 20-82 years with female (50.8%) predominance. Majority i.e. 79% of them were illiterate and 66% of them had monthly family income less than BDT 5000/-. During forced displacement majority i.e. 91.1% were forced to hide, 29.4% were tortured, 16.1% were imprisoned, 26.2% experienced extortion or robbery while 6%, 12.7% and 4.4% were kidnapped, sexually abused (female) and raped (female) respectively. Most 87.5% of the respondents' personal property were destroyed. As many as 37.5% had witness murder or death of parents; 6.9% murder or death of child; 37.5% murder or death of friends or relatives; 84.7% tortured and 39.9% witnessed rape or sexual abuse.

Conclusion These unique findings of this study are various conflict and trauma related pre-displacement factors amongst the FDMNs; evidences can be utilized to intercept persecution through international intervention and a preferred post displacement management.

Key Words: Forcibly Displaced Myanmar Nationals (FDMNs), Harvard Trauma Questionnaire Revised (HTQ-R), Conflict Related Experiences.

Introduction

For the last decade, Bangladesh has been the main country of these people for members of the Rohingya from Arakan state of Myanmar, where they have been subjected to systematic discrimination and human rights violations perpetrated by the State. Between July 2017 and December 2018, 745,000 Rohingya refugees fled Myanmar into Cox's Bazar, Bangladesh, due to widespread persecution in Rakhine State. As of December 31, 2019, Teknaf and Ukhiya upazillas host an estimated 854,704 stateless Rohingyas, almost all of whom live in Kutupalang and Balukhali camps.¹

The experience of these forcibly displaced people, which involves a sequence of adversity that traverses epochs of conflict, dislocation, flight, transition and resettlement, erodes the integrity of psychosocial systems, thereby weakening social structures and institutions and exerting deleterious effects on them. Although the relationship is indirect, the erosion of each pillar can have broad representations in the symptom patterns identified in these people.

Numerous pre displacement stressors that may impact on their life throughout their process of resettlement and are associated with increased risk for long term impact. These displaced people are with strong determination to survive; so, we should look for the capacity to survive and cope and try to help build up this positive element.²

In care of forcibly displaced people, in particular during the emergency phase, there is usually a tendency to focus entirely on the physical needs of refugees: the provision of food, water, medical care, etc. But even in the post-emergency phase, it is only rarely that attempts are made to address the psycho-social problems of refugees, despite obvious awareness of the traumatic experiences many of them have been through.³

Appropriate interventions are needed to address the scorching issues. This research effort, in tandem with appropriate diplomatic measures, political

actions and support will be one of the key components to find a meaningful and sustained step and solution. The unique findings of this study are various conflict and trauma related pre-displacement factors amongst the FDMNs; evidences can be utilized to intercept persecution through international intervention policy formulation and programming.

Materials and methods

This study amongst the Forcibly Displaced Myanmar Nationals (FDMNs) to identify the pre-displacement factors. The study population was selected from the Forcibly Displaced Myanmar Nationals (FDMNs) fled to Bangladesh from July 2017 and onward amongst adult male and female of 20 and above years of age, staying at Kutupalang and Balukhali camp of Ukhiya Upazilla of Cox's Bazar district. Data was collected by face-to-face interview through questionnaires which was developed with the help of Harvard Trauma Questionnaire Revised (HTQ-R), Part-1⁴.

Results

Among 248 respondents, 122 (49.2%) were male while 126 (50.8%) were female; 228 (91.9%) were married, 15 (6%) unmarried and 05 (2%) were widow; the mean ($\pm$ SD) age of the respondents was 40.38 ± 16.09 years while the range was 20-82 years. majority i.e. 80 (32.3%) were in 20-29 years old followed by 42 (16.9%) in 40-49 years, 41 (16.5%) in 50-59 years 40 (16.1%) in 40-49 years, 29 (11.7%) in 60-69 years, 14 (5.6%) in 70-79 years and 2 (0.9%) in 80-89 years. Among the respondents, majority i.e. 196 (79%) were Illiterate, 46 (18.5%) could complete their primary education and only 6(2.4%) obtained secondary education. Regarding economic status, majority i.e., 164 (66.1%) had income less than Tk. 5000, 56 (22.6%) had Tk. 5000-10000 and only 28(11.3%) had more than Taka 10000. Most of the respondents i.e. 176 (71%) were from Maungdaw district of Myanmar followed by 50 (20.2%) from Buthedaung and 22 (8.9%) from Rathedaung district and respondents 136 (54.8%) % were from Kutupalang camp and 112 (45.2%) were from Balukhali camp located at Ukhiya upazilla of Cox's Bazar district (Table-1).

Table:1- Socio-demographic information (n=248)

Event		<i>f</i>	%
Sex	Male	122	49.2
	Female	126	50.8
Age (in years)	20-29	80	32.3
	30-39	40	16.1
	40-49	42	16.9
	50-59	41	16.5
	60-69	29	11.7
	70-79	14	5.6
	80-89	2	0.8
Education Status	Illiterate	196	79.0
	Primary	46	18.5
	Secondary	6	2.4
Marital status	Married	228	91.9
	Unmarried	15	6.0
	Widow	5	2.0
Monthly family income	Less than taka 5000	164	66.1
	Taka 5000-10000	56	22.6
	More than taka 10000	28	11.3
Residence in Myanmar	Maungdaw	176	71
	Buthedaung	50	20.2
	Rathedaung	22	8.9
Residence in Bangladesh	Kutupalang	136	54.8
	Balukhali	112	45.2

Regarding pre-displacement factors, 40 (16.1%) had been imprisoned during forced displacement, while 65 (26.2%) had experience of extortion or robbery; majority 226 (91.1%) were forced to hide and 15 (6.0%), 16 (12.7%) and 6 (4.4%) had been kidnapped, sexually abused (female) and raped (female) respectively; A large number 73 (29.4%) of the respondents were tortured and 232 (93.5%) suffered from lack of shelter and 229 (92.3%) from lack of food or water while they were forcibly displaced (Fig-1); majority i.e. 217 (87.5%) of the respondents reported that their personal properties were destroyed; 221 (89.1%) found to have seizure of own properties and 213 (85.9%) had loss of houses (Fig-2); As many as 7 (3.1%) had disappearance or kidnapping of parents,

13 (5.2%) had disappearance or kidnapping of spouse, 23 (9.3%) disappearance or kidnapping of child, 23 (9.3 %) disappearance or kidnapping of other family member or friend, 28 (11.3%) Forced separation from family members and 36 (14.5%) reported multiple deaths of family members. Most of them i.e. 210 (84.7%) witness torture, 200 (80.6%) witnessing dead bodies, 99 (39.9%) witness rape or sexual abuse, 93 (37.5%) 93 (37.5%) witness murder of relatives due to violence; 14 (5.6%) witness murder of spouse due to violence; 17 (6.9%) witness murder or death of child due to violence and 8 (3.2%) witness murder or death of parents due to violence (Fig-3).

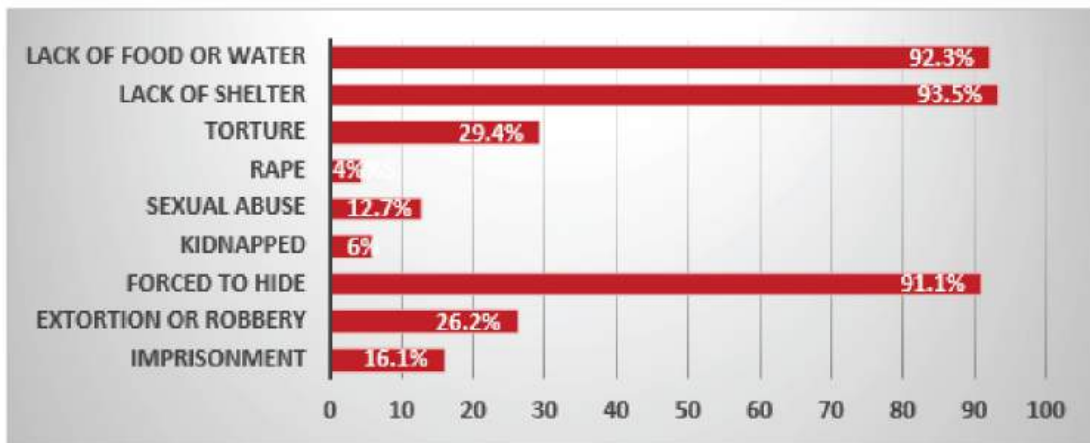


Fig-1: Distribution of the respondent by their conflict related experiences (Multiple response)

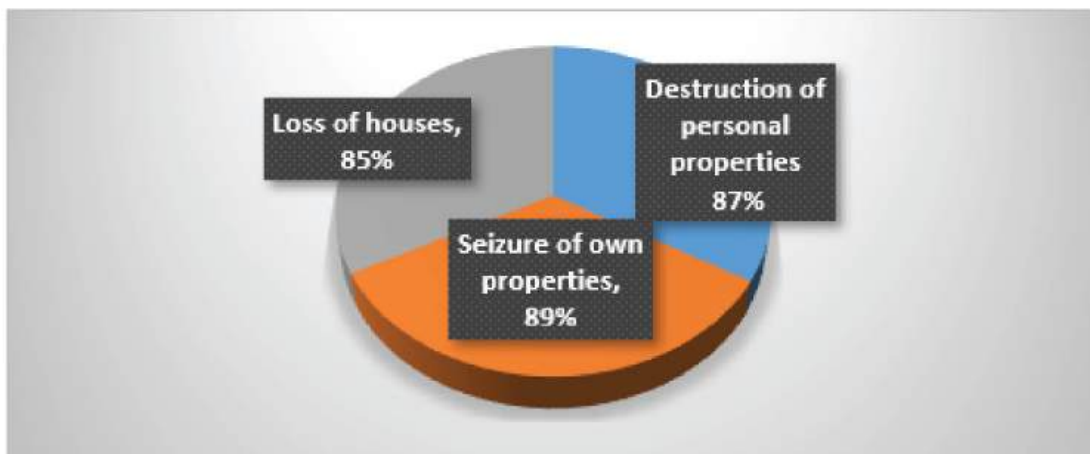


Fig-2: Distribution of the respondent by their traumatic loss of properties (Multiple response)

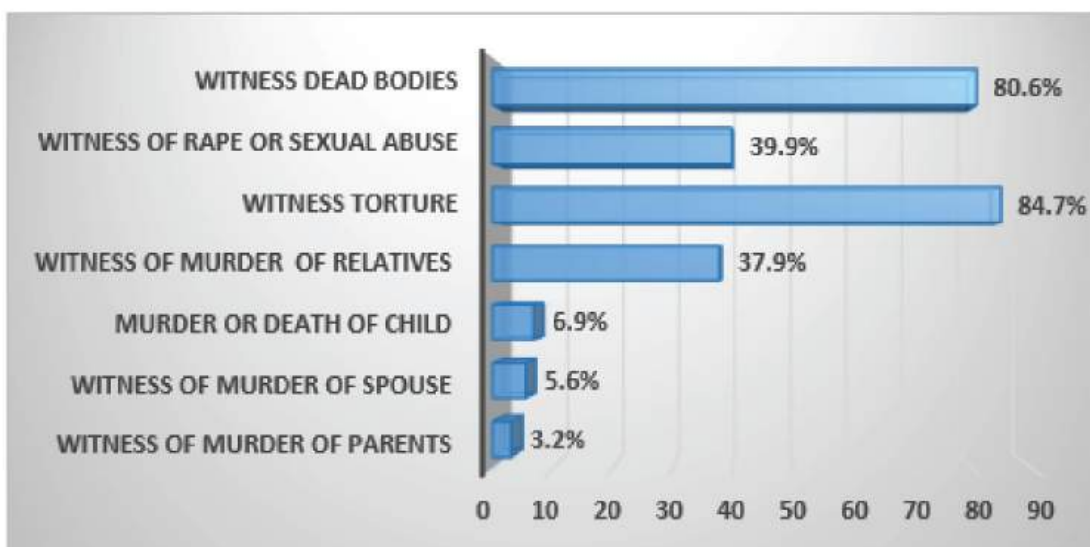


Fig-3: Distribution of the respondent by their witnessing incidents (Multiple response)

Discussion

This study described that, among the respondents, majority i.e. 79% were illiterate, 18.5% could complete their primary education and only 2.4% obtained secondary education. Marwa, I (2016) had only 5% and Roberts, B., et al., (2017) had 31.3% illiterate in their study amongst the refugees in Syria and Uganda respectively^{5, 6}.

The current study revealed the extent and types of conflict related experiences amongst the respondents. Among them 16.1% had been imprisoned during forced displacement, while 26.2% had experience of extortion or robbery. Majority 91.1% were forced to hide and 6.0%, 12.7% and 4.4% had been kidnapped, sexually abused (female) and raped (female) respectively. A large quantity 29.4% of the respondents were tortured and almost all 93.5% suffered from lack of shelter and 92.3% lack of food or water while they were forcibly displaced. Riley, V., et al., (2016) in their study amongst Rohingyas found extortion or robbery 52.2%, forced to hide 55%, torture 40%, sexual abuse 12.7%, rape 8%, imprisonment 11.7% and kidnapping 9.6%.⁷

The present study demonstrated that (3.1%) of the respondents had disappearance or kidnapping of parents; (5.2%) had disappearance or kidnapping of spouse; (9.3%) disappearance or kidnapping of child; (9.3%) disappearance or kidnapping of other family member or friend; (11.3%) Forced separation from family members; (14.5%) reported multiple deaths of family members (Kuwei, et al., (2014) found (56%) reported disappearances of their close family members and 30.9% separated from family members in their study amongst refugees in Papua New Guinea.⁸

The present study showed that 37.5% of the respondents reported witness murder or death of parents due to violence; 5.6% witness murder or death of spouse due to violence; 6.9% witness murder or death of child due to violence; 37.5% witness murder or death of friends or relatives due to violence; 84.7% witness torture; 39.9% witness rape or sexual abuse and 80.6% witness dead bodies. In their study Habib, M., et al., (2018) on Rohingyas recently fled to Bangladesh showed that 82% of participants reported witnessing their neighbours' death or saw dead bodies, 59% of participants reported witnessing neighbours who had been victims of rape, 85% of participants reported witnessing the burning down of homes 97% of participants reported witnessing their neighbours being injured.⁹

Conclusion

This cross-sectional study was carried out amongst the Forcibly Displaced Myanmar Nationals (FDMNs) in Bangladesh to explore the pre - displacement related

factors. Majority of them perceived one or more conflict related experiences i.e. imprisonment, extortion or robbery, forced to hide, kidnapped, sexual abuse or sexual humiliation, rape, torture, disappearance or kidnapping of parents, disappearance or kidnapping of spouse, disappearance or kidnapping of child, disappearance or kidnapping of other family member or friend, forced separation from family members and multiple deaths of family members, destruction or seizure of personal property. They also had witness murder or death of parents, murder or death of spouse, murder or death of child, murder or death of friends or relatives due to violence, torture, rape or sexual abuse and dead bodies during forced displacement. These above-mentioned displacement related factors had substantial influence their life in both short and long term. All these evidences may have esteemed role and can be utilized to intercept persecution through international intervention.

Ethical Clearance: Ethical clearance was obtained from the appropriate Institutional Ethical Review Committee prior to conducting the study.

Conflicts of Interest: The author(s) declare that they have no conflicts of interest.

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Cervical Cerclage to Prevent Mid-trimester Miscarriage-a Retrospective Study in a Private Hospital

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Abstract

Background

Women who have experienced miscarriages in the second trimester of a previous pregnancy due to cervical incompetence or who have additional risk indicators have been given a cervical stitch in an effort to avoid premature births.

Objective

There are 2 objectives of this study:

- In order to ascertain the efficacy of cervical cerclage (McDonald) in enhancing pregnancy outcomes among patients diagnosed with cervical incompetence.
- Also evaluate the outcome of rescue cerclage (McDonald) of pregnant women performed due to TVS or clinical evidence of short cervix ≤ 2.5 cm. or funneling of cervix in advanced pregnancy with previous history of one mid trimester miscarriage.

Materials and methods

A retrospective study was undertaken at BRB Hospitals Ltd, located in Panthapath, Dhaka, Bangladesh from July 2021 to June 2023. Sample size 45 in numbers. All patients who had a history of one or more mid-trimester abortions had cervical cerclage (McDonald suture) within this time frame and pregnancy outcome was evaluated.

Result

The findings of the study indicated a significant association between the cerclage procedure and the outcome of pregnancy. The age group of 31-40 years constituted 57.78% of the total population. Approximately 35.56% of the respondents reported having undergone a single mid-trimester abortion. A total of 71% of participants had routine cervical cerclage. Of the various interventions, 71.11% of cerclages

were administered throughout the gestational age range of 13-16 weeks. of the participants, 48.89% experienced term delivery, 33.33% experienced pre-term delivery and 17.78% experienced recurrent mid-trimester miscarriage. The mode of delivery for 55.56% of cases was vaginal delivery (VD), while 44.44% of cases were lower segment cesarean section (LSCS). Among the observed cases, 75.67% babies have birth weight 2.5 kg or more. Of the female participants, 53.33% mother did not have any co-morbidities. As many as 13 patients received rescue cerclage and among them pre term delivery occurred in 46.15%.

Conclusion

The utilization of cervical cerclage (McDonald) has been shown to be advantageous in cases of cervical insufficiency during pregnancy. Consequently, the implementation of cervical cerclage has the potential to decrease the occurrence of early pregnancy loss.

Key Words: Cervical cerclage, mid-trimester, miscarriage.

Introduction

Cervical incompetence is one of the important risk factors for mid-trimester miscarriage. It causes spontaneous delivery before the age of viability.¹

Among all obstetric cases incidence varies from 0.05% to 2%. But if there is a previous history of mid-trimester miscarriage due to cervical incompetence it can be as high as 8%.²

Cervical incompetence has no classical definition but it is described as painless, progressive dilatation of the cervix in the second or early third trimester and the outcome is membrane prolapse, membrane rupture followed by mid-trimester miscarriage, or pre-term birth.³

There are some risk factors for cervical incompetence and mid-trimester miscarriage, such as:

- Previous history of pre-term birth or mid-trimester miscarriage (16-34 weeks)
- Cervical cerclage given in previous pregnancy.
- Known uterine pathology (Unicornuate / Bicornuate/ Uterine Didelphys/ Septate uterus)

- History of trachelectomy or cervical excision surgery. (Loop electrosurgical procedure or LEEP).^{3,4} No definite diagnostic tool can establish cervical incompetence. However, some tools can be applied to confirm the diagnosis which is suspected by history. Such as:

- Measurement of cervical canal width by Hysterosalpingogram (HSG)
- If Hegar dilator 9 size is easily inserted or inserted without resistance.
- Force required to withdraw inflated Foley catheter through cervix or force required to stretch cervix by intracervical balloon.
- Cervical length measurement by Trans Vaginal Sonography is becoming popular nowadays.^{3,9,10,11,12,13}

Cervical cerclage can be applied in various methods and circumstances.

History Indicated Cerclage

Previous obstetric or gynecological history gives clues regarding risk of mid-trimester miscarriage and planned cerclage is applied at 11-14 weeks gestation.

Ultrasound Indicated Cerclage

Transvaginal ultrasound is the gold standard to measure cervical length during pregnancy. If ultrasound measurement shows a short cervix ≤ 2.5 cm and fetal membrane not exposed in the vagina, this type of cerclage can be applied.

Emergency cerclage/ Physical Indicated Cerclage

This type of cerclage is done when funneling of the cervix is seen and exposure of amniotic membrane in the vagina which can be diagnosed by USG or clinical or speculum examination performed due to vaginal discharge or pressure feeling.

Transvaginal Cerclage/ McDonald Cerclage

Performed at isthmus level without mobilization of the bladder. It was first applied by McDonald in 1951. High transvaginal cerclage / Shirodkar Suture: The bladder is mobilized and a purse-string suture is applied at the level of the cardinal ligament first invented by Shirodkar in 1951.

Transabdominal Cerclage

Purse-string is applied at the junction of the cervix and the body of the uterus, by Laparotomy or Laparoscopy.

Occlusion Cerclage

Occlusion of external os by continuous nonabsorbable suture to prevent ascending bacterial infection. The cervical mucus plug acts as a mechanical barrier and this type of cerclage will help to retain the mucus plug.^{4,5,6,7,8}

Objective

There are 2 objectives of this study:

- In order to ascertain the efficacy of cervical cerclage in enhancing pregnancy outcomes among patients diagnosed with cervical incompetence.
- Also evaluate the outcome of rescue cerclage of pregnant women performed due to TVS or clinical evidence of short cervix ≤ 2.5 cm. or funneling of the cervix in advanced pregnancy with a previous history of one mid-trimester miscarriage.

Materials and methods

A retrospective observational study was undertaken at BRB Hospitals Ltd, located in Panthapath, Dhaka, Bangladesh from July 2021 to June 2023. Sample size 45 in numbers.

Inclusion Criteria

- Previous history of 2 or more mid-trimester miscarriages due to cervical incompetence.
- Previous history of 1 mid-trimester miscarriage but clinical or transvaginal evidence of short cervix or funneling of the cervix.⁹

Exclusion Criteria

- Pregnant women with no history of mid-trimester miscarriage.
- Previous history of mid-trimester miscarriage but not due to cervical incompetence. (Missed abortion, abortion due to placental pathology).

Data Collection

Data was collected from the medical records of patients including demographic, obstetrical, and general information about the mother and neonate. Statistical analysis: Data was analyzed by SPSS 20.

Result

Among 45 patients, 19 patients were between 20-30 years, and the remaining 26 patients were between 31-40 years. Among all, 13 (28.89%) patients have 1 mid-trimester miscarriage, 16 patients (35.56%)

have 2 mid-trimester miscarriages and the remaining 16 patients have more than 2 mid-trimester miscarriages. Routine cerclage was given in 32 patients in between 13-16 weeks and rescue cerclage was given in 13 patients in between 17 weeks and onwards. After giving cervical cerclage term delivery occurred in 22 patients, pre-term delivery in 15 patients, and failed cerclage or abortion occurred in 8 patients. 25 patients delivered vaginally, and LSCS done in 20 patients. 13 patients received rescue cerclage and the outcome was preterm delivery in 6 patients, term delivery in 5 patients and abortion in 2 patients.

Table 1: Distribution of Study Subject by Age (N=45)

Age	Frequency	Percentage
20-30 year	19	42.22
31-40 year	26	57.78
Total	45	100

Table 2: Distribution Of Study Subject by No of Mid Trimester Miscarriage (N=45)

No of Mid Trimester Abortion	Frequency	Percentage
1	13	28.89
2	16	35.56
3	10	22.22
4	06	13.33
Total	45	100

Table 3: Distribution of Study Subjects by Type of Cerclage (N=45)

Types of Cerclage	Frequency	Percentage
Routine	32	71.11
Rescue	13	28.89
Total	45	100

Table 4: Distribution of study subjects by timing of cerclage:

Cerclage Given at Gestational Age	Frequency	Percentage
13-16 weeks	32	71.11
17-20 weeks	01	02.22
21 weeks and above	12	26.67
Total	45	100

Table 5: Distribution of study subjects by pregnancy outcome (n=45)

Pregnancy Outcome	Frequency	Percentage
Term Delivery	22	44.89
Pre-term Delivery	15	33.33
Abortion	08	17.78
Total	45	100

Table 6: Distribution of study subjects by Mode of delivery (n=45)

Mode of Delivery	Frequency	Percentage
VD	25	55.56
LSCS	20	44.44
Total	45	100

Table 7: Distribution of study subjects by Birth weight of baby (n=37)

Birth Weight	Frequency	Percentage
Less than 2.5 kg	9	24.32
2.5 kg or more	28	75.67
Total Alive baby	37	100

Table 8: Distribution of study subjects according to co-morbidity of the mother during pregnancy (n=45)

Co-morbidity	Frequency	Percentage
Yes	21	46.67
No	24	53.33
Total	45	100

Table 9 : Outcome of rescue cerclage (n=13)

Birth Weight	Frequency	Percentage
Pre-term delivery	06	46.15
Term delivery	05	38.46
Abortion	02	15.38
Total Alive baby	13	100

Discussion

The Cervix usually remains tightly closed during pregnancy. But it may open very early than term labor pain due to cervical weakness or any other reason. It may recur in subsequent pregnancies. Cervical cerclage will help to prevent mid-trimester due to cervical incompetence.¹⁰

A total of 45 pregnant women received cervical cerclage due to previous history of mid-trimester miscarriage, either routine or rescue cerclage. Our study population age was between 20-40 years which is similar to the study done by Anjuman Ara A et al¹ and Shamsad et al conducted a study where she included 2 or more mid-trimester miscarriages but we included the previous 1 mid-trimester miscarriage where rescue cerclage was given due to a short cervix or funneling of the cervix.¹¹

In our study, the outcome of cerclage was term delivery at 44.89%, pre-term delivery at 33.33% and abortion was 17.78% which differs from a study conducted by Clen et al, where term delivery at 76% term delivery, 12% pre-term delivery and 10% abortion.²⁵ Roberto Romero et al showed patients with elevated levels of IL-8 and had cerclage had a higher rate of pre-term delivery but we didn't do any co-relation with IL-8¹⁵. In our study Vaginal delivery was 55.56% and LSCS 44.44% which differs from the study conducted by Anjuman Ara Rita et al where she showed 20% vaginal delivery and 68.6% delivered by LSCS.¹

In our study, the live baby is 37 (82.22%), among them low birth weight babies were 24.32%, and birth weights more than 2.5 kg was 75.67% but Ezechi et al showed that 71% of case of birth weight is more than 2.5 kg.^{14,15}

Conclusion

Cervical insufficiency is one of the most common causes of mid-trimester miscarriage. Prophylactic cervical cerclage or cervical length measurement by TVS has an important role in preventing such disasters in subsequent pregnancy.

The utilization of cervical cerclage is advantageous in cases of cervical insufficiency during pregnancy. Consequently, the implementation of cervical cerclage has the potential to decrease the occurrence of early pregnancy loss.

Nowadays, Trans abdominal cerclage (usually done by laparoscopy) shows a better outcome than trans vaginal route cerclage, as it secures cervical length and strength more. Large-scale study is needed for better evidence-based practice. ^{16,17,18,19,20,21-28}

Ethical Clearance: Ethical clearance was obtained from the appropriate Institutional Ethical Review Committee prior to conducting the study.

Conflicts of Interest: The author(s) declare that they have no conflicts of interest.

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Comparison of Mental health Status Between Selective Private and Public Medical College Students

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Abstract

Background

Medical students worldwide are known to experience high levels of psychological distress, including depression, anxiety, and stress, due to academically demanding environments and numerous personal, social, and emotional stressors. In Bangladesh, the extended medical curriculum, competitive academic environment, clinical exposure, and socio-cultural stressors further intensify this burden. This study aimed to assess the prevalence of depression, anxiety, stress, suicidal tendencies, sleep habits, and the overall mental health condition among medical students from two medical colleges in Dhaka, Bangladesh.

Materials and methods

A cross-sectional study was conducted among 330 medical students selected from two public and two private medical college in Dhaka. Data were collected using

a structured questionnaire containing socio-demographic and academic variables along with the standardized DASS-21 scale to measure depression, anxiety, and stress. Descriptive statistics were used to determine frequency distributions of mental health categories. Chi-Squared tests were applied to assess associations between demographic/academic factors and mental health outcomes. Results were interpreted at a significance level of $p < 0.05$.

Results

Analysis revealed a high prevalence of psychological distress among respondents. Extremely severe depression (40.9%) and extremely severe anxiety (67%) were the most common categories, while severe stress (28.5%) also represented a major proportion. Overall, more than 80% of students experienced depression, 85% experienced anxiety, and over 70% experienced moderate to extremely severe stress.

Conclusion

The study demonstrates an alarming prevalence of depression, anxiety, and stress among medical students in Dhaka, emphasizing an urgent need for mental health screening, early intervention, counseling services, workload management, and institution-specific support systems. Addressing these issues is essential not only for improving students' well-being but also for ensuring the development of a healthy and competent future healthcare workforce in Bangladesh.

Keywords

Medical students, Depression, Anxiety, Stress, DASS-21, Academic factors, Mental health, Bangladesh, Public vs. Private institutions.

Introduction

Medical students around the world experience considerable mental pressure as a direct consequence of their studies. Several studies have reported high levels of stress, anxiety, depression, and psychological distress among medical students.^{7,12,16} Academic demands, coupled with personal, social, emotional, physical, and family-related stressors, contribute significantly to the mental burden experienced by medical students.^{6,7} The life of a future physician is therefore characterized by numerous psychological adjustments and transitions.⁶ Evidence suggests that medical students frequently experience symptoms of stress and depression at higher rates than the general population.⁷

Therefore, it is important to investigate the prevalence of depression and related mental health problems among medical students in Bangladesh. Early identification of depression, suicidal tendencies, sleep disturbances, and other psychological issues may facilitate timely screening, diagnosis, and intervention. Medical students represent the future healthcare workforce of the country and play a vital role in maintaining the health of the population. Despite the importance of this issue, comparatively few comprehensive studies have explored the mental health status of medical students in Bangladesh. Consequently, the present study was undertaken to assess depression, suicidal tendencies, sleep patterns, and overall mental health

status among students of two medical colleges in Dhaka, Bangladesh.

Medical education is an extensive and demanding journey that places significant physical, emotional, and psychological burdens on students. Throughout their training, students are exposed to multiple academic and psychosocial stressors, including heavy workloads, academic pressure, sleep deprivation, competition among peers, fear of academic failure, exposure to patient suffering and death, financial difficulties, and challenges in maintaining work-life balance.^{9,11,13} These factors may contribute to the development of depression, anxiety, burnout, and other mental health problems.^{7,15}

In addition to academic challenges, students often face major life events such as illness, marriage, childbirth, and family responsibilities, which may further increase psychological stress. Persistent exposure to these stressors can adversely affect academic performance and may lead to negative outcomes, including academic dishonesty, substance abuse, cynicism, depression, anxiety, and other psychological disorders.^{9,16} Therefore, understanding the mental health status of medical students is essential for developing effective support systems and interventions aimed at improving their well-being and academic success.

Materials and methods

A comparative cross-sectional study was conducted to compare the mental health status between selected private and public medical colleges in Dhaka. The Depression, Anxiety, and Stress Scale (DASS-21) was used to assess the mental health status of the participants.

Study Area

The study was conducted in selected public and private medical college and hospitals in Dhaka. The research was carried out in Dhaka, the capital city of Bangladesh. Specific medical college and hospitals includes-

- Marks Medical College & Hospital
- Sikder Women's medical College and hospital
- Dhaka medical college and hospital
- Suhrawardy medical college and hospital

Study Period

The study duration was 12 (twelve) months. The study was conducted from January'25 to December'25.

Study Population

Study population consisted of medical students in medical college institution at Dhaka, Bangladesh.

Inclusion Criteria

- Students currently enrolled in public and private medical college.
- Undergraduate medical students (e.g. MBBS 1st year)
- Students who voluntarily agree to participate and provide informed consent.

Exclusion Criteria

- Students currently on a leave of absence or not actively attending classes.
- Interns and Graduates
- History of Psychiatric illness.

Sampling Technique

Convenience sampling was used in this study. It is a non-probability sampling technique in which study participants were chosen based on inclusion and exclusion criteria relevant to the study. In this scenario students were selected who were easily accessible.

Data Collection Instrument

A pre-defined DASS21 questionnaire format was used for data collection to compare the mental health status between public and private medical college students. It was provided in both English and Bengali to ensure that all participants can understand the questionnaire.

Data management and Analysis Plan

Statistical analysis of data were carried out by using IBM SPSS Statistics 29. Descriptive statistics were used to summarize demographic data. Data were presented using a frequency table, graph & chart.

Result

A total of 330 students from selected colleges participated in this study. The collected data were analyzed to assess their demographics characteristics and to compare the mental health status between the two groups. The findings are

presented in the following tables and figures, illustrating the distribution of variables and the differences observed between public and private medical college students.

Table 1 : Distribution of demographic variables among the respondents

Attributes	Frequency (n= 330)	Percentage (%)
Age		
20-21 years	217	65.8
22-23 years	113	34.2
Sex		
Male	133	40.3
Female	197	59.7
College Type		
Public	165	50
Private	165	50
Address		
Home	54	16.4
Hostel	276	83.6
Marital Status		
Married	2	.6
Single	328	99.4

Table-1 provides socio-demographic backgrounds. The study included a total of 330 respondents. Their demographic characteristics are summarized and interpreted below. The majority of respondents were aged 20–21 years, accounting for 217 students (65.8%). Meanwhile, 113 respondents (34.2%) were aged 22–23 years. Out of the 330 respondents, 197 (59.7%) were females and 133 (40.3%) were males.

The sample is evenly split between public and private colleges, with 165 respondents (50%) from each type. A significant majority of the respondents, 276 (83.6%), reported living in hostels, while only 54 (16.4%) stayed at home. Nearly all participants were single, with 328 respondents (99.4%) reporting this status. Only 2 respondents (0.6%) were married.

Table 2: Academic factors among the respondents

Attributes	Frequency (n=330)	Percentage (%)
Reason To Study		
Own Wish	169	51.2
Family Pressure	90	27.3
Social Work	33	10
Financial Gain	19	5.8
Don't Know	19	5.8
Academic Performance		
Poor	36	10.9
Fair	135	40.9
Average	123	37.3
Good	27	8.2
Excellent	9	2.7
Class Attendance		
Less than 50% of classes	3	.9
50-69% of classes	84	14.5
70-84% of classes	171	51.8
85% of classes	108	32.7
Course Load		
Easy	10	3
Manageable	49	14.8
Neutral	91	27.6
Difficult	124	37.6
Very Difficult	56	17.0
Extra Curriculum Activities		
Yes	106	32.1
No	224	67.9

According to the Table-2 the majority of students (169 respondents; 51.2%) reported that they pursued their studies out of their own wish, indicating strong intrinsic motivation. A considerable proportion (90 respondents; 27.3%) mentioned family pressure. Only 33 respondents (10%) were motivated by an interest in social work, while 19 respondents each (5.8%) chose their course for financial gain. Most respondents assessed their academic performance as fair (135 respondents; 40.9%) or average (123 respondents; 37.3%).

A smaller group reported poor performance (36 respondents; 10.9%), while only 27 respondents (8.2%) rated themselves as good, and 9 respondents (2.7%) considered their performance excellent. More than half of the respondents (171 students; 51.8%) attended 70–84% of classes, indicating generally consistent attendance.

Another 108 students (32.7%) attended 85% or more. Only a small minority demonstrated low attendance: 84 students (14.5%) attended 50–69%, and only 3 respondents (0.9%) attended less than 50%. A large proportion of respondents perceived their course load as difficult (124 students; 37.6%) or very difficult (56 students; 17%), totaling 54.6%. Meanwhile, 91 respondents (27.6%) considered the load neutral, and only a small number found it manageable (49 respondents; 14.8%) or easy (10 respondents; 3%). Only 106 respondents (32.1%) participated in extracurricular activities, while a majority (224 respondents; 67.9%) did not.

Table 3: Distribution of DASS 21 among respondents

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

NB -Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.

Analysis of the DASS-21 items among 330 respondents shows that mild to moderate levels of depression, anxiety, and stress related symptoms were commonly reported. For most items, the highest proportions fell under "applied to me to some degree", indicating that a considerable number of participants experienced these symptoms at least occasionally.

Stress-related items such as difficulty winding down, overreacting, agitation, and trouble relaxing frequently had 30–40% of respondents reporting symptoms some of the time, with an additional 20–30% experiencing them to a considerable degree.

For anxiety-related symptoms including trembling, breathing difficulty, panic concerns, and awareness of heart action around 25–40% reported experiencing them occasionally, though fewer reported severe levels.

Table 4: Distribution of respondents According to mental health status (DASS 21)

Severity level	Depression		Anxiety		Stress	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Normal	16	4.8%	5	1.5%	50	15.2%
Mild	29	8.8%	11	3.3%	41	12.4%
Moderate	74	22.4%	34	10.3%	79	23.9%
Severe	76	23%	59	17.9%	94	28.5%
Extreme severe	135	40.9%	221	64%	66	20%

Table 5: Association between demographic characteristic and mental health status (Chi-Squared-Test)

Demographic variables	Depression	Anxiety	Stress
Age	P=0.151	P=0.677	P=0.235
Gender	P=0.000	P=0.003	P=0.002
Adress	P=0.122	P=0.671	P=0.492
College type	P=0.050	P=0.164	P=0.020
Marital status	P=0.048	P=0.008	P=0.546

Table 6: Association between academic factors and mental health status (Chi-Squared-Test)

Academic Factors	Depression	Anxiety	Stress
Reason to study	P=0.040	P=0.133	P=0.000
Academic performance	P=0.000	P=0.000	P=0.000
Attendance	P=0.000	P=0.270	P=0.000
Course load	P=0.000	P=0.002	P=0.000
Extracurricular Activities	P=0.452	P=0.0957	P=0.569

Depressive symptoms such as lack of positive feeling, loss of initiative, feeling downhearted, and perceiving life as meaningless were also present, with 30–40% reporting mild levels and 10–20% reporting severe symptoms, particularly for feelings of low self-worth and meaninglessness.

Overall, the distribution indicates that while many respondents experienced symptoms only occasionally, a meaningful subset reported considerable or frequent psychological distress, highlighting the importance of mental health support among the sample population.

Table-5 presents the association between demographic variables and mental health outcomes—depression, anxiety, and stress—using the Chi-Squared test. The analysis showed that age had no statistically significant association with any of the mental health outcomes. This suggests that age did not play a major role in influencing psychological symptoms among the participants. In contrast, gender demonstrated a significant association with all three mental health variables, with depression ($p = 0.000$), anxiety ($p = 0.003$), and stress ($p = 0.002$) varying meaningfully across gender groups. Address was not significantly associated with depression ($p = 0.122$), anxiety ($p = 0.671$), or stress ($p = 0.492$), indicating that place of residence did not influence mental health status. College type showed mixed results, being marginally significant for depression ($p = 0.050$) and significant for stress ($p = 0.020$), but not significant for anxiety ($p = 0.164$), suggesting that college type may influence certain mental health outcomes. Finally, marital status showed a significant association with depression ($p = 0.048$) and anxiety ($p = 0.008$), but not with stress ($p = 0.546$), indicating that marital status may impact some psychological conditions but not others.

Table-6 shows the association between academic factors and mental health outcomes using the Chi-Squared test. The results indicate that the reason for studying was significantly associated with depression ($p = 0.040$) and strongly associated with stress ($p = 0.000$), although no significant relationship was found with anxiety ($p = 0.133$).

Academic performance showed a highly significant association with all three mental health outcomes—depression, anxiety, and stress (all $p = 0.000$)—suggesting that students' academic achievements strongly influence their psychological well-being. Attendance was also significantly associated with depression ($p = 0.000$) and stress ($p = 0.000$), but not with anxiety ($p = 0.270$). Course load demonstrated a significant association with all three mental health variables, including depression ($p = 0.000$), anxiety ($p = 0.002$), and stress ($p = 0.000$), indicating that heavier academic workloads contribute to increased psychological distress. In contrast, extracurricular activities showed no significant association with depression ($p = 0.452$), anxiety ($p = 0.957$), or stress ($p = 0.569$), suggesting that participation in such activities did not have a measurable impact on students' mental health in this study.

interpreted below. The majority of respondents were aged 20–21 years, accounting for 217 students (65.8%). Meanwhile, 113 respondents (34.2%) were aged 22–23 years. Out of the 330 respondents, 197 (59.7%) were females and 133 (40.3%) were males.

The sample is evenly split between public and private colleges, with 165 respondents (50%) from each type. A significant majority of the respondents, 276 (83.6%), reported living in hostels, while only 54 (16.4%) stayed at home. Nearly all participants were single, with 328 respondents (99.4%) reporting this status. Only 2 respondents (0.6%) were married.

The comparison of DASS-21 subscale scores between public and private groups showed mixed findings. For depression, mean scores were slightly higher in the public group than the private group; however, this difference was not statistically significant ($p = 0.050$), indicating comparable levels of depressive symptoms between groups. Similarly, anxiety scores did not differ significantly between public and private groups ($p = 0.164$), suggesting similar anxiety experiences.

In contrast, stress levels were significantly higher in the public group compared to the private group ($p = 0.020$), indicating greater perceived stress among public participants. Most notably, the total DASS-21 score was significantly higher in the private group than the public group ($p = 0.002$), reflecting an overall

Table 7: Comparison of DASS 21 scores between public and private medical college students (Independent t-test)

DASS 21 Subscale	Group	n	Mean $\pm$ SD	t	df	p-value
Depression	Public	165	3.92 $\pm$ 1.2	0.379	328	0.050
	Private	165	3.81 $\pm$ 1.1			
Anxiety	Public	165	4.48 $\pm$ 0.8	0.631	328	0.164
	Private	165	4.43 $\pm$ 1.00			
Stress	Public	165	3.35 $\pm$ 1.3	0.229	328	0.020
	Private	165	3.17 $\pm$ 1.2			
Total DASS 21 score	Public	165	51.1 $\pm$ 19.9	0.260	328	0.002
	Private	165	68.7 $\pm$ 18.4			

greater psychological distress in the private group despite similar subscale patterns. These findings suggest that while individual emotional domains may not differ substantially, cumulative psychological distress varies between groups and warrants further investigation into contributing academic, social, or environmental factors.

Discussion

The purpose of this study was to assess and compare the mental health status of medical students in selected public and private medical colleges in Bangladesh. Using the DASS-21 scale, this study explored the prevalence of depression, anxiety, and stress and examined how socio-demographic and academic-related factors influence the mental health of medical students. This chapter discusses the findings in relation to existing literature and outlines possible explanations for the observed patterns.

The majority of respondents (65.8%) belonged to the 20–21-year age group, followed by 22–23 years (34.2%). This age distribution reflects the typical undergraduate medical student population in

Bangladesh, who are at a transitional developmental stage where academic responsibilities, personal expectations, and emotional maturity intersect. Previous studies have highlighted that medical students exhibit higher vulnerability to psychological distress due to adjustment difficulties, academic pressure, and limited coping experience.⁸ Thus, the age profile of the sample may directly contribute to the elevated depression, anxiety, and stress levels observed.

Female students represented 59.7% of the sample, indicating a gender distribution consistent with recent trends in medical education. Previous studies have reported that female medical students tend to experience higher levels of anxiety and depressive symptoms than their male counterparts, potentially due to gender-specific social expectations and emotional factors.^{7,15} The predominance of female respondents may therefore have contributed to the overall mental health burden observed in this study.

A striking 83.6% of respondents lived in hostels, a factor commonly associated with increased

psychological vulnerability due to homesickness, competitive peer environments, disrupted sleep patterns, and limited emotional support. Previous research has demonstrated that inadequate social support and stressful living environments are associated with increased risks of depression, anxiety, and burnout among medical students.^{6,9}

Nearly all respondents (99.4%) were unmarried, suggesting a heavy reliance on peer relationships for emotional support. The absence of strong support systems may increase vulnerability to psychological distress and contribute to adverse mental health outcomes.^{7,15}

Regarding motivation for studying medicine, 51.2% of students reported choosing the profession voluntarily, whereas 27.3% reported family influence or pressure. Previous studies suggest that external pressure to pursue a medical career may contribute to stress and depressive symptoms when personal interests do not align with academic expectations.^{6,13} This factor may partly explain the high prevalence of psychological distress observed among respondents.

Students generally rated their academic performance as average or fair. Previous literature has demonstrated that lower academic self-perception is associated with higher levels of depression, anxiety, and stress among medical students.^{7,16} Lower attendance rates observed among a minority of students may also reflect psychological burnout, as depression and anxiety are known to contribute to absenteeism and reduced academic performance.⁹

More than half of the respondents perceived the medical curriculum as difficult or very difficult. This finding is consistent with previous studies identifying academic overload, examination pressure, and excessive workload as major determinants of stress among medical students.^{11,12,13} Additionally, only 32.1% of students participated in extracurricular

activities. Limited involvement in recreational and extracurricular activities may reduce opportunities for stress management and personal development, thereby increasing vulnerability to psychological distress.¹⁷

The prevalence of depression in the present study was alarmingly high. Approximately 40.9% of respondents experienced extremely severe depression, while 23.0% experienced severe depression. More than 83% of students fell within the moderate-to-extremely severe depression categories. Similar studies conducted among medical students in Nepal, India, Pakistan, and Bangladesh have also reported high rates of depression, although the prevalence observed in this study appears comparatively higher.^{1,12,18,23}

Anxiety levels were even more concerning, with 67.0% of respondents reporting extremely severe anxiety and 17.9% reporting severe anxiety. Nearly 85% experienced anxiety above moderate intensity. Previous studies have consistently shown that academic demands, examination stress, uncertainty regarding future careers, and financial concerns are important contributors to anxiety among medical students.^{2,7,16}

Stress levels were also substantial, with more than 70% of respondents experiencing stress above mild intensity. Similar findings have been reported in studies from different countries, where medical education has been identified as a significant source of psychological stress due to workload, competition, and professional expectations.^{11,12,16}

Comparisons between public and private institutions revealed both shared and distinct stressors. Public medical students demonstrated higher levels of extreme depression and severe stress, possibly reflecting intense academic competition, larger class sizes, and limited support services. Conversely, private medical students exhibited higher levels of

extremely severe anxiety, potentially associated with financial pressures and expectations related to educational investment. Although differences existed between institutional types, both groups displayed substantial psychological distress, suggesting that mental health challenges are widespread throughout the medical education system.

Overall, the findings reveal a significant mental health burden among Bangladeshi medical students. The high prevalence of depression, anxiety, and stress observed in this study highlights the urgent need for institutional reforms, accessible mental health services, student counseling programs, stress-management interventions, and supportive educational environments. Addressing these issues is essential not only for students' well-being but also for ensuring the development of a healthy, competent, and resilient future healthcare workforce.^{7,9,17}

Conclusion

This study demonstrates that medical students in Bangladesh experience critically high levels of depression, anxiety, and stress, affecting both public and private institutions. Psychological distress is shaped by multiple interconnected factors, including academic pressure, demanding curricula, family expectations, financial burdens, hostel living, and limited emotional support.

The prevalence of mental health symptoms far exceeds regional and international benchmarks, indicating that these challenges are systemic rather than isolated. Contributing factors include inadequate counseling services, lack of mental health awareness programs, limited opportunities for social and extra-curricular engagement, and cultural stigma surrounding mental health.

Overall, the findings highlight the urgent need for comprehensive interventions at institutional and policy levels, including the implementation of counseling services, curriculum restructuring to reduce academic overload, mental health education, and efforts to reduce stigma. Protecting the mental health

of medical students is a public health priority, as these students represent the future healthcare workforce of Bangladesh. Immediate, coordinated action is essential to address this escalating psychological crisis.

Ethical Clearance: Ethical clearance was obtained from the appropriate Institutional Ethical Review Committee prior to conducting the study.

Conflicts of Interest: The author(s) declare that they have no conflicts of interest.

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Uremic Pruritus in Dialysis Patients: Current Evidence and Future Therapeutic Directions

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Abstract

Chronic kidney disease-associated pruritus affects a substantial proportion of hemodialysis patients yet remains underrecognized and undertreated. This review synthesizes evidence from original research published between 2016 and 2026 on epidemiology, pathophysiology, therapeutics, and long-term outcomes. Multi-center studies report a prevalence of 53–64%, with key risk factors including elevated white blood cell count and dry skin. Pathophysiologically, the condition involves non-histaminergic pathways, immune dysregulation, toxin accumulation, and peripheral neuropathy. The kappa-opioid receptor agonist difelikefalin significantly improved Worst Itching Intensity Numerical Rating Scale scores compared with placebo (mean difference -0.81, 95% confidence interval: -1.25 to -0.37) and enhanced quality of life on the Skindex-10 questionnaire.

Gabapentin and pregabalin reduced pruritus severity, with pregabalin showing

superiority over doxepin. Omega-3 fatty acids demonstrated comparable efficacy to gabapentin with greater prostaglandin E2 reduction. Narrowband ultraviolet B phototherapy and hemoperfusion combined with hemodialysis provided additional options, reducing pruritus scores by 51–63%. Beyond symptom burden, uremic pruritus is associated with increased infection-related hospitalization (hazard ratio: 1.18) and major adverse cardiac and cerebrovascular events (hazard ratio: 1.05). Diagnosis rates remain low, and no head-to-head trials exist between difelikefalin and gabapentinoids. Future directions should prioritize comparative effectiveness studies, long-term safety data, and integration of patient-reported outcome measures into routine care.

Keywords: Chronic kidney disease, Difelikefalin, Gabapentin, Hemodialysis, Hemoperfusion, Pruritus

Introduction

Chronic kidney disease-associated pruritus (CKD-aP), commonly referred to as uremic pruritus, is a distressing and debilitating symptom experienced by a substantial proportion of patients receiving maintenance hemodialysis.^{1,2} Prevalence estimates vary depending on diagnostic criteria and geographical location, but contemporary data from the Dialysis Outcomes and Practice Patterns Study (DOPPS) indicate that 40–60% of hemodialysis patients suffer from pruritus, with approximately one-quarter experiencing moderate-to-severe symptoms.^{3,4} Despite this high burden, CKD-aP remains under-recognized by healthcare professionals and underreported by patients.⁵ Studies have shown that less than 30% of affected patients receive any specific anti-pruritic therapy.^{6,7} The clinical impact of CKD-aP extends far beyond skin discomfort. Patients with moderate-to-severe pruritus experience significant impairments in health-related quality of life, including disrupted sleep, depressed mood, reduced social functioning, and interference with daily activities.^{8,9} Worse pruritus intensity has been associated with increased hospitalization risk, higher mortality, and greater healthcare expenditures.^{10,11} A large prospective cohort study demonstrated that patients with severe pruritus had a 17% higher risk of death compared with those without pruritus, independent of traditional risk factors.³ These findings underscore that pruritus is not merely a dermatologic nuisance but a marker of poor prognosis. The pathophysiology of CKD-aP has long remained elusive, but several mechanisms have been proposed.^{12,13} The non-histaminergic pathway appears to be the primary mediator, with protease-activated receptor-2 receptors on itch-specific C-fibers playing a central role.¹⁴ Accumulation of middle-molecular-weight toxins such as β 2-microglobulin and parathyroid hormone, along with immune dysregulation involving interleukins and tumor necrosis factor- α , further contribute to itch sensitization.^{15,13} The opioid receptor imbalance hypothesis—in which mu-opioid receptor activation promotes itch and kappa-opioid receptor activation suppresses it—has gained substantial support from clinical trials of kappa-opioid agonists.^{16,17} Therapeutic options for CKD-aP have expanded considerably in recent years.^{18,19} Difelikefalin, a selective kappa-opioid receptor agonist administered intravenously

post-dialysis, received regulatory approval in the United States, European Union, and other countries based on phase 3 trials demonstrating significant pruritus reduction and improved quality of life.^{19,20,21} Gabapentin and pregabalin, originally developed for neuropathic pain, have shown efficacy in multiple randomized controlled trials.^{22,23} Non-pharmacological approaches, including narrowband ultraviolet B phototherapy and hemoperfusion combined with hemodialysis, offer additional or adjunctive benefits.^{24,25} However, direct comparisons between these modalities remain limited, and no standardized treatment algorithm has been adopted universally.^{26,27} This review synthesizes current evidence from original research, critically appraises the efficacy and safety of available interventions, and identifies knowledge gaps to guide future therapeutic directions in the management of uremic pruritus in dialysis patients.

Materials and methods

This narrative review synthesizes original research (2016–2026) from PubMed, PMC, and Google Scholar using terms like "uremic pruritus," "CKD-associated pruritus," "hemodialysis," "hemoperfusion," "difelikefalin," and "quality of life." Included were RCTs, cohort, cross-sectional, and controlled trials with full text; reviews provided background only. Non-English articles and those on non-uremic pruritus were excluded.

Study Selection

From the initial search yield, 10 original articles were selected for core analysis, to purposively represent each major therapeutic domain with the most robust and recent available evidence for that category, based on direct relevance to adult hemodialysis uremic pruritus, availability of extractable numerical data, peer review, and accessible full text. The selected articles encompassed pharmacological (difelikefalin, gabapentin, pregabalin, doxepin, omega-3), non-pharmacological (UVB, hemoperfusion combined with hemodialysis) interventions, epidemiological surveys, and a nationwide cohort study on long term morbidities.

Table 1: Summary of Core Studies Included in the Review

Study (Year)	Design	n	Intervention	Comparator	Key Finding
Zuo et al. (2026)	Phase 3 RCT	259	Difelikefalin 0.5 g/kg IV	Placebo	WI-NRS Δ -0.81; P = .0003
Ständer et al. (2024)	Post hoc analysis	914	Difelikefalin	Placebo	Skindex-10 Δ -3.4; P = .002
De Sequera et al. (2025)	Cross-sectional	21	Survey	N/A	Diagnosis rate 1.71/5; treatment efficacy 1.91/5
Ozen et al. (2018)	Cross-sectional	249	Risk factor analysis	N/A	Prevalence 53.4%; WBC >6.7 associated
Ting et al. (2020)	Cohort	44,280	UP vs non-UP	N/A	Infection hospitalization HR 1.18; MACCE HR 1.05
Teama et al. (2025)	Crossover RCT	50	Omega-32 g/day	Gabapentin 100 mg	Both effective; omega-3 superior for PGE2 (P=0.001)
Foroutan et al. (2016)	Single-blind RCT	72	Pregabalin 50 mg	Doxepin 10 mg	Pregabalin superior for VAS, 5-D itch, DLQI (P < .001)
Sherjeena et al. (2017)	Controlled trial	30	NB-UVB (15 sessions)	Paraffin + Cetirizine	Significant VAS reduction with NB-UVB (P = .001)
Zhang et al. (2016)	RCT	40	HP+HD	HP+HDF	HP+HDF superior for β 2M and PTH reduction (P < .05)
Zhao et al. (2022)	Open-label RCT	438	HP+LFHD or HP+HFHD	LFHD or HFHD	Pruritus reduction: 63% (HP+LFHD), 51% (HP+HFHD)

Abbreviations

CI, confidence interval; DLQI, Dermatology Life Quality Index; HD, hemodialysis; HDF, hemodiafiltration; HP, hemoperfusion; HR, hazard ratio; IV, intravenous; LFHD, low-flux hemodialysis; HFHD, high-flux hemodialysis; MACCE, major adverse cardiac and cerebrovascular events; NB-UVB, narrowband ultraviolet B; NHIRD, National Health Insurance Research Database; OR, odds ratio; PGE2, prostaglandin E2; PTH, parathyroid hormone; RCT, randomized controlled trial; UP, uremic pruritus; VAS, visual analog scale; WBC, white blood cell; WI-NRS, Worst Itching Intensity Numerical Rating Scale; β 2M, beta-2 microglobulin.

Outcome Measures

Pruritus severity was assessed via the WI-NRS (0–10, 24-hour recall; ≥ 3 -point reduction clinically meaningful),^{28,29} the 5-D Itch Scale (5–25, covering duration, degree, direction, distribution, disability),^{30,31} and VAS (0–10 cm).^{31,34} Quality of life used Skindex-10 (0–60; ≥ 15 -point improvement clinically relevant)²⁹ and DLQI (0–30).³¹

Biochemical Measurements

Several studies measured β 2-microglobulin and PTH as biomarkers of middle-molecule clearance using scatter turbidimetry or electrochemiluminescence immunoassay.^{35,32} Prostaglandin E2 was assessed by enzyme-linked immunosorbent assay.³⁰ Standard automated analyzers measured calcium, phosphorus, albumin, and white blood cell counts.³⁴

Phototherapy and Hemoperfusion Protocol

NB-UVB is used in a whole-body chamber, starting 200 mJ/cm², +10%/session over 15 sessions every third day (max. 1038 mJ/cm²).³³ Hemoperfusion with HA130 cartridge + hemodialysis for 4h (2h combined, then HD alone), weekly for 12 months; blood flow 200–250 mL/min, dialysate flow 500 mL/min.^{2,32,35}

Definition of Uremic Pruritus in Cohort Study

In Taiwan's cohort study, uremic pruritus was defined as ≥ 84 daily doses of antihistamines or equivalent antipruritic or UVB therapy within 1 year after dialysis initiation. Long-term antihistamine users were excluded from the control group.³⁶

Quality Assessment

No formal quality scoring was used. Included studies were critically appraised for design, sample size, outcome clarity, and bias; limitations are discussed in the relevant sections.

Epidemiology & Burden

Uremic pruritus remains highly prevalent (50–67%) across hemodialysis cohorts. Studies report 53.4% (Turkey, VAS 6.47), 64.3% (China, 24.6% severe), and 59% (Spain, 36% moderate-severe).^{35, 37} Taiwan confirm that pruritus is a near-ubiquitous burden in the dialysis population.

Risk Factors

Pruritus severity associated with WBC $>6.7 \times 10^3/\mu\text{L}$ and dry skin. Cardiovascular disease more common in pruritic patients ($P=0.031$).³⁴ DOPPS Phase 5 found no consistent correlations with dialysis adequacy, PTH, calcium, or phosphate, indicating multifactorial pathogenesis.³⁷

Impact on Quality of Life

Using the Skindex-10 (2024) found the greatest impairments in disease and mood domains;³⁴ 33.8%

wake up several times at night due to itch. Embarrassment from scratching in public, avoiding social interactions, and strained relationships. Clinically meaningful itch reduction with difelikefalin improved social functioning by 68–75%,²⁹ confirming pruritus as a systemic psychological and social burden.

Association with Long-Term Morbidities

A Taiwanese cohort study of 44,280 dialysis patients found, uremic pruritus is associated with increased the risks of infection-related hospitalization (HR: 1.18), catheter-related infection (HR: 1.16), and cardiac and cerebrovascular events (HR 1.05).³⁶ Thus, it is an independent marker of poor prognosis, not just a symptom burden.

Pathophysiology

The recent evidence has coalesced around a multifactorial model involving immune dysregulation, toxin accumulation, peripheral neuropathy, and non-histaminergic signaling pathways. Unlike allergic itch, which is mediated primarily by histamine, uremic pruritus predominantly follows a non-histaminergic pathway. Approximately 90% of C-itch fibers in patients with CKD are histamine-independent, which explains the poor efficacy of antihistamines in this condition.^{34, 30}

Immune and Inflammatory Mechanisms

Systemic inflammation plays a central role in pruritogenesis. In a Turkish study, white blood cell counts exceeding $6.7 \times 10^3/\mu\text{L}$ increased pruritus odds 1.73-fold (95% CI: 1.360–2.888; $P = 0.036$).³⁴ This supports that ongoing low-grade inflammation sensitizes peripheral itch receptors. Dermal mast cells and keratinocytes release pruritogens that activate protease-activated receptor-2 on afferent nerve endings.

Toxin Accumulation and Middle-Molecular-Weight Solutes

Middle-molecular-weight toxins (particularly β 2-microglobulin) and PTH accumulate in uremia and contribute to pruritus. In a RCT, hemoperfusion combined with hemodialysis significantly reduced both toxin levels and pruritus scores (63%), confirming that enhanced middle-molecule clearance alleviates itch intensity.^{35,32}

Kappa-opioid Receptor Imbalance

Uremic pruritus involves mu-opioid promotion and kappa-opioid suppression of itch. Difelikefalin, a peripheral kappa agonist, restores balance, reducing pruritus without CNS effects; rapid improvement by week 2 confirms direct opioid pathway involvement.^{28,29}

Non-histaminergic Neural Pathways

Uremic pruritus is transmitted through non-histaminergic C-fibers expressing TRPV1 and TRPA1 channels, explaining why antihistamines provide little relief. Gabapentin and pregabalin, which modulate voltage-gated calcium channels, significantly reduce itch severity. Pregabalin's superiority over the antihistamine doxepin confirms that uremic pruritus is primarily neuropathic rather than histaminergic in origin.^{31,30}

Role of prostaglandins and lipid mediators

Omega-3 (2 g/day) reduced 5-D itch scores with superior PGE2 reduction versus gabapentin.³⁰ By interrupting PGE2-mediated inflammation, it shifts treatment paradigms from antihistamines toward

anti-inflammatory and neuromodulatory agents, providing a mechanistic basis for its antipruritic effect.

Omega-3 Fatty Acids

Omega-3 fatty acids inhibit pro-inflammatory mediators, including prostaglandin E2. In a crossover trial, omega-3 (2g/day) and gabapentin similarly reduced 5-D itch scores, but omega-3 demonstrated significantly greater PGE2 reduction ($P=0.001$), supporting an anti-inflammatory mechanism.³⁰

Antihistamines and Other Agents

Doxepin (10 mg daily) reduced VAS from 7.1 to 4.2, versus pregabalin's 7.6 to 2.1 ($P<0.001$).³¹ This confirms uremic pruritus is predominantly non-histaminergic; antihistamines are not first-line. Table 2 summarizes RCT efficacy.

Non-Pharmacological Treatments

Non-pharmacological modalities like narrowband UVB phototherapy and hemoperfusion with hemodialysis show efficacy for patients with contraindications to pharmacological agents.

Table 2: Comparison of Pharmacological Treatments for Uremic Pruritus

Drug	Dose	Study (n)	Outcome Measure	Baseline Score	Post-Treatment Score	Effect Size (95% CI)	P-value
Difelikefalin	0.5 g/kg IV thrice weekly	Zuo et al. (259)	WI-NRS (0-10)	7.35	3.2	Δ -0.81 vs placebo	<.001
Gabapentin	100 mg thrice weekly	Teama et al. (50)	5-D itch (5-25)	13	7	Not reported	0.001
Pregabalin	50 mg every other day	Foroutan et al. (72)	VAS (0-10)	7.56	2.1	Not reported	<.001
Doxepin	10 mg daily	Foroutan et al. (72)	VAS (0-10)	7.1	4.2	Not reported	<.001
Omega-3	2 g/day	Teama et al. (50)	5-D itch (5-25)	13	7	Not reported	<.001

Hemoperfusion Combined with Hemodialysis

In a trial, HP+HDF reduced pruritus scores from 8.08 to 3.21 (remission 100%) versus HP+HD.³² A multicenter trial showed HP independently increased β 2-microglobulin reduction by 8.28% and PTH by 22.04% ($P<0.05$), with 63% pruritus score reduction.³⁵ Adverse events (hypotension, coagulation) were acceptable. Hemoperfusion offers significant adjunctive benefit.

Discussion

This review of ten studies confirms uremic pruritus affects 40–60% of hemodialysis patients, with persistent underdiagnosis and undertreatment.³⁵ Evidence supports shifting from antihistamines to neuropathic or kappa-opioid targeted therapies (difelikefalin, gabapentin, pregabalin, omega-3).^{20,22} While difelikefalin acts predominantly on peripheral kappa-opioid receptors, the central opioid system plays an equally critical role in uremic pruritus. Central mu-opioid receptor activation promotes itch sensitization, whereas central kappa-opioid receptor stimulation suppresses it. The efficacy of centrally-penetrating kappa-agonists (e.g., nalfurafine) alongside peripheral agents confirms this dual-site involvement; however, the peripherally-restricted action of difelikefalin offers a distinct safety advantage by minimizing central nervous system adverse effects.

Key Gaps Remain

No head-to-head difelikefalin versus gabapentinoid trials; optimal therapy duration unknown; and patient-reported outcome measures are underused in routine care.^{8,19} Pruritus associates with increased infection, cardiovascular events, and mortality (15–20% higher risk), though causality is unproven.^{3,10} Generalizability is supported by consistent difelikefalin efficacy across Asian and Western populations.^{16,17} Strengths include geographic diversity and inclusion of pharmacological and non-pharmacological modalities; limitations are narrative design, potential publication bias, and exclusion of non-English articles.^{26,27} In conclusion, uremic pruritus is prevalent, underrecognized, and treatable. Clinicians

should implement routine screening and prioritize evidence-based, non-antihistamine therapies.²⁵ Despite significant advances in the understanding and treatment of uremic pruritus, several critical knowledge gaps remain. Most trials followed patients for only 12 weeks, and long-term data beyond one year are limited. Similarly, the durability of hemoperfusion benefits beyond 12 months requires confirmation.²⁸ Identifying serum or skin biomarkers—such as specific interleukins, neuropeptides, or opioid receptor expression levels—could enable personalized treatment selection and monitor therapeutic response.³⁴ Future research should focus on implementation strategies, including routine screening using validated tools (WI-NRS, 5-D itch scale), electronic health record prompts, and multidisciplinary care pathways involving nephrologists, dermatologists, and nurses.^{37,28}

Biomarker development

Currently, no validated biomarker predicts treatment response or pruritus severity. Elevated white blood cell count and dry skin have been identified as risk factors (Ozen et al., 2018), but these are neither sensitive nor specific. Identifying serum or skin biomarkers—such as specific interleukins, neuropeptides, or opioid receptor expression levels—could enable personalized treatment selection and monitor therapeutic response.³⁴

Conclusion

Uremic pruritus affects 53–64% of hemodialysis patients, yet remains underdiagnosed and undertreated. It impairs quality of life and associates with infection-related hospitalization and MACCE. Pathophysiology involves non-histaminergic pathways, inflammation, toxin accumulation, and opioid imbalance. Difelikefalin, gabapentin, pregabalin, omega-3, NB-UVB, and hemoperfusion show efficacy. Gaps include no head-to-head trials versus gabapentinoids, limited long-term safety, and no validated biomarkers. Clinicians should screen routinely and prioritize non-antihistamine therapies; acceptance as inevitable is no longer justified.

Table 3: Evidence Gaps and Future Research Priorities

Evidence Gap	Current Status	Proposed Research Direction
Head-to-head Comparison of difelikefalin vs gabapentinoids	No direct trial	Non-inferiority RCT with QoL and cost-effectiveness analyses
Long-term safety data	Limited to 12-26 weeks	Extended follow-up studies (≥ 2 years) for difelikefalin and hemoperfusion
Biomarkers for treatment response	None validated	Identify serum or skin biomarkers (cytokines, neuropeptides, opioid receptors)
Implementation strategies	Underdiagnosis persists (diagnosis rate 1.71/5)	Routine screening with WI-NRS or 5-D itch scale; EHR prompts
Patient-reported outcomes in routine care	Seldom used	Integrate Skindex-10 into dialysis quality measures
Comparative effectiveness of non-pharmacological modalities	No direct comparison with drugs	Pragmatic trial: difelikefalin vs gabapentin vs NB-UVB vs hemoperfusion
Mechanistic understanding of the initiation phase	Incomplete	Basic science research on early pruritus triggers and prevention targets

Ethical Clearance: Ethical clearance was obtained from the appropriate Institutional Ethical Review Committee prior to conducting the study.

Conflicts of Interest: The author(s) declare that they have no conflicts of interest.

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A Case Report: Tuberculosis of the Knee Joint

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Introduction

Joint tuberculosis is an uncommon manifestation of tuberculosis that typically presents with subacute or chronic atraumatic inflammatory symptoms in single, large, weight bearing joints. Tuberculosis has been as a disease with many mimicry clinical manifestations that often lead to being underdiagnosed¹. Tuberculosis of musculoskeletal system is an uncommon infection caused by tubercle bacilli & constitutes 1% to 3% of all forms of tuberculosis. About 30% of skeletal tuberculosis involves the joints, knee being the 3rd most commonly affected after the spine & hip. Tuberculosis knee is haematogenous infection secondary to focus of active disease elsewhere in the body, which may not be found. Variable presentation of this disease provides difficulties in diagnosing it, particularly in extra-pulmonary tuberculosis². Knee tuberculosis commonly presents as synovitis or arthritis. Treatment of joint tuberculosis should be started promptly for preservation of joint function and prevention of irreversible joint destruction.

Case report

A 51 yrs old man come to out patient clinic with major complaints of pain & swelling of right knee that progressively occurred 2021, there was also intermittent pain that has been experienced since the symptoms emerged. The pain characteristically was exacerbated after strenuous activities. Loosing appetite & weight loss for 2 kg in one month has been suffered, & no symptoms of night sweats & chills are experienced. He has no respiratory manifestation. Since 2021 he was seen by other physician and diagnosed as arthritis or inflammatory arthritis & given medication accordingly- improvement of symptoms & clinical conditions were reported. The swelling of leg become more severe with the increase frequency of pain exacerbated after 2 yrs of alternative approach.

Physical examination have reported the presence of swelling & thickened synovium on palpation of right knee with impaired joint motion 110°-30° with no abnormality was found on Physical examination of the spine, hip & left knee.

Initial lab result showed a leukocyte count 8.69 (normal= $4-1 \times 10^9/L$) & an elevated CRP Level of 24.5 (normal= $<3.1 \text{ mg/L}$). A radiograph of the patient right knee showed bony destruction of the knee joint and a lytic lesion with ill defined in periarticular projection in right proximal tibia and irregular bony destruction of lateral femoral condyle.

MRI was used later. There was moderate joint effusion, irregular erosion, lysis involving lateral cortex of lateral femoral condyle associated bone marrow oedema, extra articular fluid containing soft tissues mass formation including adjacent muscular oedema, also mild bone marrow oedema in articular tibial condyle. After contrast, almost uniform synovial thickening with enhancement containing fluid associated few small variable sized T2 hypointense foci within due to suspected caseous necrosis, fibrosis.

MRI findings before the start of treatment

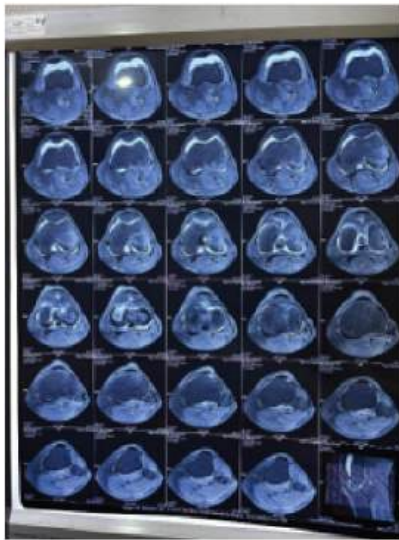


Figure 1. Axial MRI of right knee joint

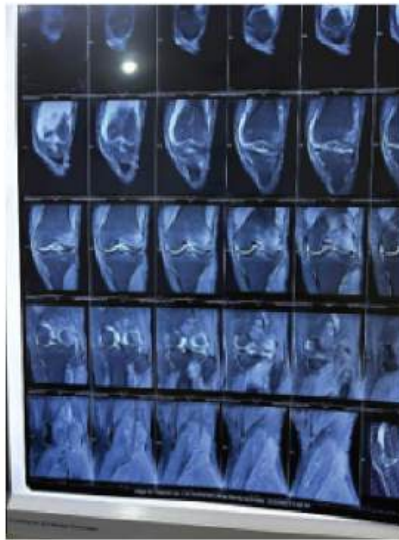


Figure 2. Coronal section of Right knee joint MRI

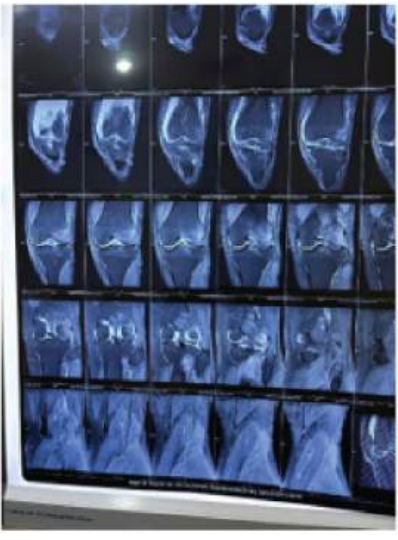


Figure 3. Sagittal section right knee joint MRI

MRI findings after treatment



Figure 4. Sagittal section



Figure 5. Coronal section



Figure 6. Axial section

MT was done, induration 19 mm, Quantiferon TB GOLD TEST was also (+) ve Joint fluid aspiration and Biopsy not done.

Patient was prescribed with isoniazid (10mg/kg/day), pyrazinamide (30mg/kg/day) and ethambutol (15mg/kg/day) daily for 2 months. Treatment was then continued with isoniazid (10mg/kg/day) and rifampicin (15mg/kg/day). Clinical improvement was observed after 6 months of treatments; it was clinically proven that the improvements on flexed and extended ability to 130° and 10°. The side effects of treatments did not really affect patients condition. After 1 yr. The pt has shown no clinical symptoms with exception of limited flexibility movement (maximum flexed ability 160°) and there was improvement of radiologic examination. After 9 months repeat MRI of knee were done, there was mild synovial effusion and mild thickening of synovial membrane. The patient was suggested to attend physical rehabilitation to ameliorate his joints movement. This time, he has been work as before he suffered the disease without any serious limitation. clinical and radiological followed up might be considered to detect long term complication, including secondary osteoarthritis.

Discussion

Tuberculosis has been considered as significant health problems, infecting almost a quarter of the population of the world with the highest incidence in productive age³. Tuberculosis can manifest in the condition of extra pulmonary, including lymph node, skin meninges and bone. Bone & joint tuberculosis commonly develop in children after primary infection & adults after reactivation. Extra axial disease usually presents as a monoarthritis that affects the knee or hip. Key feature of tuberculosis include presence of risk factor, long duration of constitutional symptoms. Unlike in septic arthritis infectious symptoms such as fever and chills, rigors or elevated heart rate are usually absent in tuberculous arthritis. Other differential diagnosis include bacterial septic arthritis, crystal arthropathy, rheumatoid arthritis, gout disease and osteoarthritis. Findings from physical examination are nonspecific and include restricted range of motion, swelling and joint effusion. Joint erythema, warmth and tenderness may be absent, unlike in

crystal arthropathy or septic arthritis. Typical radiologic findings in early disease show thickening of synovium and joint effusion similar to other causes of monoarthritis such as septic arthritis or crystal arthropathy⁴. Later- Stage disease has features of juxta-articular osteopenia, peripheral osseous erosions joint space narrowing, known as the phemister triad⁵. Some chronic case may have sinus tract formation.

Diagnosis of tubercular infection of bone and joint depends largely on suspicion of diagnosis, and in an age where prevalence of the disease is rising. Joint tuberculosis may be suspected in a chronic case of joint pain usually monoarticular. Although pulmonary tuberculosis may be absent, patient may demonstrate systemic symptoms of fatigue, lethargy and weight loss. Pyrexia of unknown origin may be a presenting feature. Common presenting symptoms are gradual onset of pain, stiffness, limping, swelling and local tenderness. Laboratory investigations may yield the classical, although non-specific findings of raised ESR, leukocytosis and raised CRP.

Histopathological patterns in tissue specimens may show a critical necrotic area surrounded by histiocytes and occasional giant cells with nuclei positioned at the margin of cells.

Plain radiographs may show the phemister triad in later stage disease, but MRI & CT are the best imaging modalities for disease characterization. In particular, MRI offers the most specificity for tuberculous arthritis. However, joint tuberculosis has no pathognomic imaging findings so requires microbiological confirmation. Diagnosis is typically achieved by synovial fluid analysis or synovial biopsy. Histopathological examination was critical in diagnosing extra-pulmonary tuberculosis⁶. Testing synovial fluid for acid-fast bacilli has a low sensitivity of about 30%, culture takes weeks to detect growth & requires specialized laboratories. New methods for molecular detection of *M. tuberculosis* such as NAAT are rapid, more geographical and do not require specialized lab. Despite the presence of joint destruction, tuberculous arthritis typically response well to medical therapy and is usually treated 12-18 months. According to the guideline, standard tuberculosis treatment

of extra-pulmonary tuberculosis are divided into two phases; the intensive phase which includes the combination of RHZE & continued phase includes R&H⁷ for more than 1 yr. Tuberculosis arthritis does not require acute surgical management. Invasive treatments, including surgical removal of synovium of the involved joint, which is followed by post-operative anti-tuberculous therapy, provide positive outcomes in patients with knee tuberculosis⁸.

After 1 year of follow up, the patient has displayed no clinical symptoms with the exception of slight limitation of flexed movements. This might be the result of muscle stiffness or the destruction of the knee joint. Which was relieved by regular physiotherapy.

In this case no surgical intervention (TKR/Synovectomy) was done. Arthroscopic management is considered as an alternative treatment in early stage of knee tuberculosis.

Early secondary osteoarthritis is a common complication following knee tuberculosis. The patient needs regular physiotherapy and medical monitoring for assessing the long-term complications of knee tuberculosis.

Conclusion

Tuberculous arthritis of the knee should be considered in patients presenting with persistent chronic monoarthritis that fails to respond to conventional treatment, particularly in tuberculosis-endemic regions. Although microbiological or histopathological confirmation remains the diagnostic gold standard, a comprehensive clinico-radiological assessment supported by immunological investigations and a favourable therapeutic response may provide sufficient diagnostic confidence when tissue diagnosis cannot be obtained. Prompt initiation of appropriate antitubercular chemotherapy, together with structured rehabilitation, can relieve symptoms, preserve joint function, minimise permanent disability, and reduce the need for surgical intervention.

Ethical Clearance: Ethical clearance was obtained from the appropriate Institutional Ethical Review Committee prior to conducting the study.

Conflicts of Interest: The author(s) declare that they have no conflicts of interest.

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