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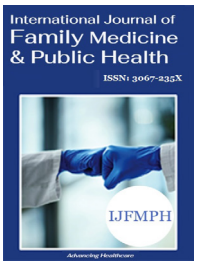

Post Dengue Depression and It's Associated Factors Among Bangladeshi Population; Observation From a Tertiary Care Medical College Hospital

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A B S T R A C T

Background: Dengue, also known as tropical flue has become endemic in many Asian countries including Bangladesh. Dengue disease still lacks of research especially mental health concerns during post infection period. Therefore, the present study investigates the prevalence of post dengue depression and it's associated factors among the Bangladeshi adult population.

Methods and materials: A cross sectional descriptive observational study was conducted among the dengue infected patients, within 1-3 months following discharge from hospital. Information was collected through a pre-structured questionnaire via face-to-face interview where depression during post dengue infection state was assessed by PHQ-9 and data were analyzed with SPSS V-25. Prevalence of post dengue depression and it's associative factors were explored by appropriate statistical test.

Results: A total number of 246 participants were included in our study. Majority (37.9%) were aged 18-29 years, city dwellers (82.1%), married (77.6%), and Muslim (89.4%). All respondents (100%) had other earning members in their families, and the majority (52%) reported a family income between 10,001 and 20,000 BDT. About 35% participants were reported having depression in their post infection state within 1-3 months of follow-up following their discharge from hospital. Among the post infection depressed population, 27% were male and 73 % were female. Sex, monthly family income, Hospitalization days, leave of work due to illness, estimated total cost for treatment were statistically significant($p<0.05$) for post dengue depression.

Limitation: Small sample size, absence of psychiatric evaluation to declare depression during post infection period, selection of the study site in a public tertiary medical college hospital which may limit the generalizability of participation from all social classes, all of these were limitations of our study.

Conclusion: Prevalence of post dengue depression and it's associated factors among Bangladeshi population is not explored yet. To our knowledge, this is the first ever study in Bangladesh that in-depth explored the impact of patient factors' variability on post dengue depression. This may warrant the health care professionals to incorporate psychiatric counselling for dengue infected individuals during the follow-up following discharge from hospital.

Introduction

Dengue fever is caused by one of four antigenically distinct serotypes (DENV 1-4) of the dengue virus, which is transmitted by infected female *Aedes* mosquitoes [1]. During epidemics, the simultaneous circulation of these four serotypes increases, subsequently enhancing the risk of dengue infection up to four times compared to previous situations, resulting in more severe disease [2]. Several studies suggest that nearly 390 million people are infected annually, with approximately 20,000 deaths attributed to dengue virus infection [3].

Bangladesh is considered a hotspot for dengue outbreaks in South Asia. According to a study, the country faced its first recorded dengue outbreak in 2000, with 5,521 confirmed cases and 92 deaths [4]. The Ministry of Health and Family Welfare (MOHFW) of Bangladesh reported a total of 69,483 laboratory-confirmed dengue cases, including 327 dengue-related deaths (case fatality rate = 0.47%), between January 1 and August 7, 2023 [5]. In 2023, the reported number of dengue cases and deaths in Bangladesh has been the highest in history, with cases continuing to rise [5-7].

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The World Health Organization (WHO) reports that dengue virus infection causes a wide range of clinical manifestations, including high-grade continuous fever with chills and rigors, headache, abdominal pain, myalgia, retro-orbital pain, bleeding, and low platelet count (thrombocytopenia), which can lead to acute organ failure, cardiomyopathy, shock, and even death [8]. Recently, a meta-analysis indicated that the dengue virus exhibits neurovirulent properties, expressing an association with neurological complications among infected individuals [9]. The most prevalent neurological manifestation of dengue virus infection is encephalopathy [10]. Depression and anxiety are among the most frequently studied psychiatric manifestations of dengue-related encephalopathy [11]. The prevalence of borderline and clinical depression among hospitalized dengue patients ranges from 60% to 81% [11].

Case studies suggest that patients with dengue infection may exhibit delusions, visual and auditory hallucinations, agitation, psychosis, mania, and catatonia [12-16]. During the acute febrile phase of dengue fever, approximately 90% of patients experience thanatophobia (fear of death), whereas, during the recovery phase (one week after illness onset), about 55% develop a fear of mosquitoes [11,17].

Depression, a global mental health disorder, is characterized by persistent sadness and a lack of interest or pleasure in previously rewarding activities [18]. Various studies have assessed psychiatric manifestations in dengue fever. For instance, in one study, 60% to 90% of patients experienced anxiety and depression during the acute phase, whereas only 5% to 10% exhibited these symptoms during the convalescent phase [19]. Another study found that approximately 59% of patients were affected by depression during the acute illness [20]. The severity of fever, headache, myalgia, and arthralgia has been positively correlated with depression and anxiety in dengue-related studies [11]. Anxiety and depression have also been linked to conditions such as fatigue, fibromyalgia, migraine or tension headaches [21], chronic abdominal pain, juvenile idiopathic arthritis, HIV particularly in children and adolescents [22-24].

While extensive research has explored the physical and clinical manifestations of dengue, mental health issues remain under addressed, leaving a significant knowledge gap [25]. Although dengue outbreaks in Bangladesh have been extensively studied in terms of epidemiology, case fatality, and vector control, little research has examined its mental health consequences. To date, no study has investigated post-infection depression following dengue viral illness in Bangladeshi adults. Post-illness depression is often misattributed to weakness or stress instead of being properly diagnosed and treated [26].

Our study aims to be one of the first to document post-dengue depression and its associated factors in Bangladesh, providing new insights into the psychological consequences of infectious diseases and promoting a holistic approach to patient care.

Materials and methods

Aim, study design and description of study site

A cross-sectional, observational, and descriptive study was conducted among adult patients at Mugda Medical College Hospital, Dhaka, Bangladesh. The study included clinically confirmed cases of dengue (NS1 positive) who were admitted for treatment between June 15, 2023, and October 15, 2023. A total of 600 patients were selected conveniently and consecutively from the hospital case record books. They were invited via mobile phone within seven days of discharge for a follow-up visit on mutual agreement, scheduled between one to three months following their discharge, using a unique ID number.

A total of 340 participants attended the follow-up visit, and 300 participants with unique serial ID numbers were selected as the final study sample (*Figure 1*). A pre-structured questionnaire was developed for the study, covering socio-demographic characteristics, health and behavior-related factors, and treatment-related variables. The PHQ-9 questionnaire was utilized to assess depression among the study participants. All questionnaire items were translated into the local Bangla language for data collection and later retranslated into English for data analysis and reporting. The questionnaire was designed with input from experts to ensure its appropriateness for the study context.

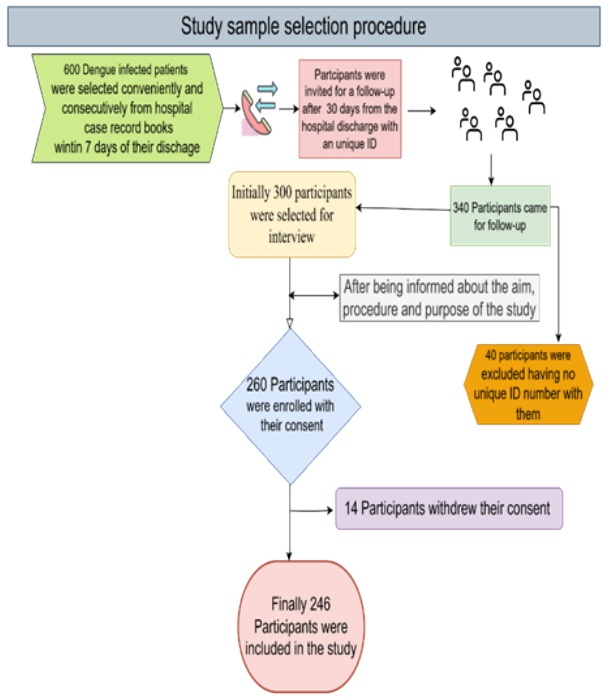

Figure 1: Flowchart of selection of study participants.

Before the main data collection, a pilot study was conducted among 20 participants. The validity and reliability of each questionnaire item were evaluated by experts, considering the content validity index (CVI) and internal consistency, which were found to be satisfactory in the study setting. Data were then collected through face-to-face interviews using the pre-structured questionnaire. Information was gathered on socio-demographic factors, health and behavior, treatment-related aspects of dengue infection, and depression status. Depression was assessed by trained physicians using the PHQ-9 tool.

Inclusion criteria

After being informed about the study, the dengue infected participants aged more than 18 years who left the hospital at least 1 month ago, came with unique serial ID number for follow-up and gave informed written consent for the study were only included in our study.

Exclusion criteria

participants less than 18 years old, participants who didn't give their consent initially or who withdrew their consent after the interview, didn't complete their response, participants with previously diagnosed psychiatric illness, participants with long term co-morbidity like- IHD, CVD, malignancy, CKD, CLD which may influence the mental health of individuals, persons having family disharmony or separation or divorce, participants who are pregnant were excluded from our study.

Sample size calculation

The study used Rao soft sample size online calculator to determine the sample size. In previous literature the prevalence of post dengue depression was reported 15% and 16 % respectively. However, we assumed the prevalence of post dengue depression 20% for sample size calculation with 5% margin error and it estimated a total number of 243 participants for our study.

Measures:

Sociodemographic factors

The survey collected basic sociodemographic factors such as-age, gender, residence, marital status, religion, family income and any other earning member in family. Information regarding the age was collected as a continuous variable and the it grouped into five categories whereas 18-29 years was the first category, then 4 categories were prepared at 10 years interval and last category was at or above 60 years of old. Similarly, Information regarding the monthly family income was collected

as a continuous variable and it was grouped into four categories; the first one was less or equal 10000 BDT, second one was 10001 to 20000 BDT, Third was 20001 to 30000 BDT and the last one was more than 30000 BDT considering the local socio-economic context of our representative study samples. Monthly family income was expressed in Bangladeshi Taka (BDT) which is the local currency of our country BDT.

Behavior and health related variables

Participants behavior related information such as- smoking and alcoholism status was determined by using close ended responses (Yes or no). In addition, Self-rated co-morbidity (Diabetes, hypertension) was assessed using a binary response (Yes or No).

Dengue treatment related factors

Patient's treatment related factors were assessed by information regarding duration of illness, duration of stay in hospital, leave of work for illness, cost for the treatment expressed in BDT. Information regarding all of these variables were captured by open ended answers and then the continuous responses regarding these variables were grouped into categorical ones considering the corresponding "mean" value or standard value set by experts from their observation in our context. The variable "Duration if illness" was grouped into two categories; first one less than 9 days, second one was more than 9 days. Similarly, the variable "Hospitalization days" was grouped into three categories; first one less than 5 days, second one 5-7 days and the last one was more than 7 days. Another variable "Leave of work for illness" was grouped into three categories; first one less than 7 days, second group was within 7-12 days and the last group was at or more than 12 days duration. The variable "Cost for treatment" denoting the expenditure for buying medicines, doing laboratory investigations during this illness episode, transportation, food and accommodation during the treatment period in hospital was grouped into three categories: first one less or equal 6000 BDT, second one was in between 6001 to 10000 BDT, third group was more than 10000 BDT.

Assessment of depression status

The Patient Health Questionnaire (PHQ-9) having 9 items was used in our study. This particular scale was developed for screening the depression in community and clinical settings with a time frame of prior 14 days. Answers are provided using a four-point Likert scale (0 = not at all, 1 = several days, 2 = more than half of the days, and 3 = nearly every day), leading to a score range of 0–27, where a score of 0 indicates the absence of depression symptoms, and 27 indicates daily depressive symptoms. A score of ≥ 10 was retained as indicating the presence of depression [27].

Ethical Consideration

Initially Ethical review board of Mugda Medical College, Dhaka approved the project, then an IRB approval from that institute was taken from that institute (Reference: IREB/ MuMC/ECC /2024/74). After being informed about the aim, purpose, procedure and importance of the study, an informed written consent from each participant was considered mandatory before entering the study. Other ethical issues such as- right to decline the participation or right to withdraw the participation was followed as per the Helsinki Declaration of 2013 as suggested by World Medical association (WMA) [28].

Data analysis:

Data were compiled by using Microsoft Exel and then prepared for analysis with IBM SPSS V-25 (Statistical Package for Social Science). The "Depression status" measured by PHQ-9 scale value was set as dependent variable and normality of the dependent variable was assessed by appropriate statistical test method and the depression status of the selected participants were not normally distributed. Descriptive statistics (Total number, percentage), comparing mean (mean, standard deviation) as well as variance test (Mann-Whitney test or Kruskal Wallis test) were performed as appropriate to explore the results. A p value <0.05 was set to statistically significant. Binary logistic regression analysis was done to find out the associated factors responsible for post dengue depression from our studied variables where p value was set to statistically significant less than 0.05.

Result:

Among the total study population (246 participants), the majority (37.9%) were aged 18-29 years, while a minority (5.78%) were 60 years or older. Most participants were city dwellers (82.1%), married (77.6%), and Muslim (89.4%). All respondents (100%) had other earning members in their families, and the majority (52%) reported a family income between 10,001 and 20,000 BDT. Only a small percentage (5.7%) had a family income of 30,000 BDT or more (*Table 1*). Regarding lifestyle factors, 83.7% of respondents were non-smokers, and 99.6% were non-drinkers. Only 0.5% of participants did not respond to the question about alcohol consumption, and 26% of respondents reported having no co-morbid conditions (*Table 2*).

As for illness-related data, the majority (60%) of participants reported that their illness lasted less than nine days, while 40% reported that their illness duration exceeded nine days (*Table 3*). Most participants (67%) stayed in the hospital for fewer than five days, with nearly 10% staying for more than seven days (*Table 3*).

In terms of work absenteeism, half of the respondents (50%) took leave for seven to twelve days, about 41% took leave for more than twelve days, and only 9% returned to work within seven days of their illness. Regarding treatment costs, 52% of respondents reported that their treatment costs were less than 6,000 BDT, while 17% spent more than 10,000 BDT, even though they were treated in a public government-supported tertiary care hospital (*Table 3*).

Post-dengue depression was observed in more than one-third of the population (35%) (*Figure 2*), with 37% of affected individuals being male and the majority (63%) female (*Figure 2*).

Tables 1-3 also present the association between post-dengue depression and various studied variables. A significant relationship ($p < 0.05$) was found between post-dengue depression and age, sex, residence, marital status, family income, co-morbidity, illness duration, work leave due to illness, and treatment cost. Participants aged 50-59 years had the highest rates of post-dengue depression compared to those in the 18-29 age group (9.09±3.95 vs. 6.45±3.11) (*Table 1*). Married Muslim participants were more likely to experience depression than unmarried Hindus (7.89±3.64 vs. 6.54±3.05 and 7.68±3.58 vs. 6.80±3.42, respectively). Those with a family income of less than 10,000 BDT were more likely to experience depression than those with a family income above 30,000 BDT (10.57±3.78 vs. 6.64±2.50) (*Table 1*).

The study also found no significant association between behavioral and health-related variables and post-dengue depression (p-value > 0.05). Additionally, participants who incurred treatment costs exceeding 10,000 BDT during their illness were more likely to experience depression than those whose treatment costs were less than 5,000 BDT (9.71±3.94 vs. 6.94±3.07). Furthermore, participants who experienced illness for more than nine days were more likely to experience depression than those with a shorter illness duration (8.26±3.68 vs. 7.15±3.41). Similarly, participants who stayed in the hospital for five to seven days were more likely to experience depression than those who stayed less than five days (8.84±3.82 vs. 7.23±3.43). Participants who took seven to twelve days off work due to illness were more likely to experience depression than those who took fewer than seven days off (9.63±3.17 vs. 5.62±2.27) (*Table 3*).

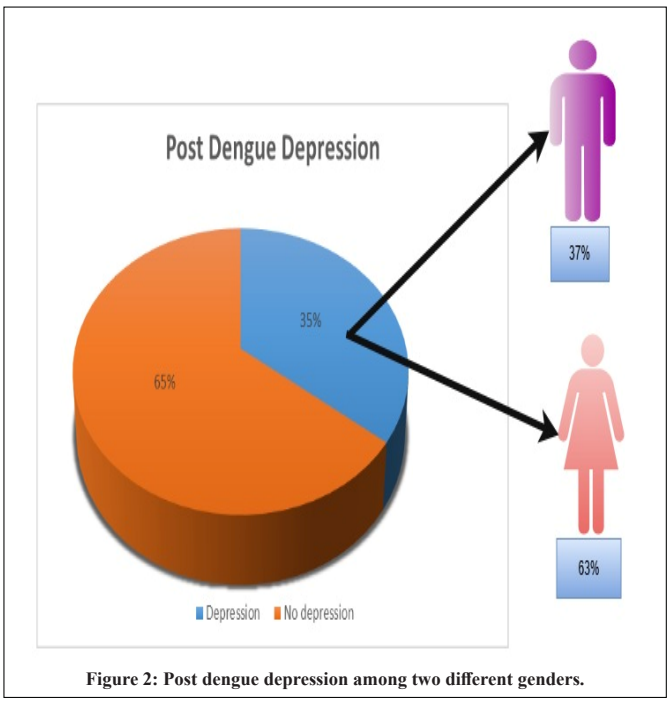

Figure 2: Post dengue depression among two different genders.

Table 1: Distribution of post dengue depression among socio-demographic variables.

Age (Years)	N(%)	Mean and SD	P value
18-29	92(37.4)	6.45±3.11	0.002**
30-39	69(28.00)	8.43±3.45	
40-49	47(19.1)	7.87±3.83	
50-59	24(9.8)	9.09±3.95	
≥60	14(5.7)	7.36,3.48	
Sex			<0.001*
Male	128(52.2)	6.79±3.62	
Female	117(47.8)	8.47±3.31	
Residence			0.03*
Village	202(82.1)	7.34±3.46	
City	44(17.9)	8.73±3.82	
Marital status			0.02*
Married	191(77.6)	7.89±3.64	
Unmarried	55(22.4)	6.54±3.05	
Religion			0.27
Muslim	219(89.4)	7.68±3.58	
Hindu	26(10.6)	6.80±3.42	
Family income (Tk)			0.01**
≤10000	14(5.7)	10.57±3.78	
10001-20000	128(52)	7.68±3.67	
20001-30000	90(36.6)	7.15±3.29	
≥30000	14(5.7)	6.64±2.50	
Any other earning member in family			Not valid
Yes	246(100)	7.59±3.56	

* = Mann-Whitney test (U test)
** = Kruskal-Wallis test (H test)

Table 2: Distribution of Post dengue depression among behavior and health-related variables.

Smoking	N(%)	Mean and SD	P value
Yes	40(16.4)	8.13±3.38	0.15
No	206(83.7)	7.44±3.58	
Alcoholism (Missing data =1)			Not valid
No	245(99.6)	7.59±3.55	
Co morbidity Status			0.03*
Yes	63(25.6)	8.46±3.45	
No	183(74.4)	7.29±3.55	

Table 3: Distribution of post dengue depression among dengue treatment related variable.

Duration of illness (days)	N(%)	Mean and SD	P value
<9	148(60.2)	7.15±3.41	0.02*
>9	98(39.8)	8.26±3.68	
Duration of stay in hospital (Days)			0.01**
<5	164(66.7)	7.23±3.43	
5-7	58(23.6)	8.84±3.82	
>7	24(9.8)	7.08±3.23	
Leave from Work for illness (days)			<0.001**
<7	21(8.6)	5.62±2.27	
7-12	122(49.8)	9.63±3.17	
≥12	102(41.6)	8.84±3.83	
Estimated Cost for treatment (BDT)			<0.001**
≤6000	129(52.4)	6.94±3.07	
6001-10000	75(30.5)	7.54±3.93	
>10000	42(17.1)	9.71±3.54	

(Cox & Snell R Square -0.301 and Nagelkerke R Square- 0.413 and p<0.05)

A binary logistic regression analysis was conducted to explore the factors associated with post-dengue depression among the study sample. This analysis explained 41% of the variance in post-dengue depression and correctly classified approximately 75% of the cases. The variables found to be significantly associated with post-dengue depression ($p < 0.05$) included sex, monthly family income, duration of stay in the hospital, work leave due to illness, and estimated treatment cost (*Table 4*).

Table 4: Predictors of Post dengue depression.

Predictors	B	SE	Wald	df	Sig.	Exp(B)
Age (years)						
18-29 (Reference)						
30-39	.93	0.88	1.124	1	0.29	2.54
40-49	1.26	0.83	2.30	1	0.13	3.54
50-59	1.35	0.83	2.64	1	0.10	3.83
≥60	1.38	0.89	2.43	1	0.12	3.99
Sex						
Male (Reference)						
Female	-1.16	0.41	8.08	1	**0.004**	0.32
Residence						
City (Reference)						
Village	0.51	0.45	1.29	1	0.26	1.66
Marital status						
Married (Reference)						
Unmarried	0.96	0.50	3.60	1	0.06	2.61
Family income (BDT)			8.266	3	**0.04**	
≤10000 (Reference)						
10001-20000	2.81	1.02	7.48	1	**0.006**	15.71
20001-30000	1.00	0.78	1.64	1	0.200	2.73
>30,000	1.05	0.81	1.68	1	0.195	2.58
Smoking						
Yes (Reference)						
No	0.324	0.616	0.277	1	0.59	1.38
Co-morbidity						
Yes (Reference)						
No	0.98	0.50	3.80	1	0.05	2.66
Duration of illness(days)						
< 9 days (Reference)						
>9 days	0.07	0.42	0.03	1	0.86	1.07
Hospitalization days			6.55	2	**0.03**	
<5 days (Reference)						
5-7 days	1.56	0.67	5.59	1	**0.02**	4.76
>7 days	1.61	0.66	5.92	1	**0.01**	5.02
Leave of work for illness			10.19	2	**0.006**	
<7 days (Reference)						
7-12 days	-1.17	0.42	7.80	1	**0.005**	0.31
>12 days	-2.20	0.89	6.01	1	**0.01**	0.11
Estimated cost for treatment (BDT)			8.16	2	**0.01**	
< 5000 (Reference)						
5001-10000	-1.48	0.53	7.70	1	**0.006**	0.23
>10000	-1.38	0.54	6.62	1	**0.01**	0.25

Discussion

Dengue is one of the common diseases in tropical and sub-tropical countries and evidence also supports that dengue infection has impact on patient's psychology[19].But sufficient attention has not been given to explore the post infection depression status among Bangladeshi population. So, the aim of our study was to explore the post dengue depression status as well as it's associative factors among Bangladeshi adults. Our study revealed that amongst the studied population,35% participants were suffering from post- dengue depression immediately after the illness (within one moth). A previous literature revealed that at a 6-24 months follow-up following dengue infection the prevalence of depression was 15% [29]. In our study, among the depressed population females were more in number (73%) that is strengthened by a previous evidence[11] but makes it contradiction with another study from Pakistan where post dengue depression was more prevalent among male[30].In our socio-cultural context, Women, often have caregiving roles that might add to their emotional burden after an illness and might have contribution to post dengue depression. One of the similar studies report that, the prevalence of depression among the dengue in-patient (pediatric age group) was 13.3% where age, family history of dengue fever, having less or equal 2 days of hospitalization, myalgia, arthralgia were found associated with increased depression[20]. It was different from our study concept because, ours one was conducted during the post illness period and it was conducted during the illness period. According to our study the monthly family income is one of the associated factors for post dengue depression which is also arbitrated by a previous study where the authors had identified the low income for a lifetime depression [30]. Surprisingly, Participants having family income less than 10000 BDT are less prone to depression than the participants having monthly family income more than 10000 BDT. In our study, participants with monthly family income in the range between 10,000 to 20,000 BDT showed the sixteen times more trend in depression as compared with the participants with monthly family income less than 10,000 BDT (B=2.81, SE=1.02, OR= 15.71, $p < 0.05$) *(Table-4).* There might be a possible explanation that the individuals having monthly family income less than 10000 BDT might have fewer expectations regarding access to healthcare, work stability, and post-illness financial recovery, they are more likely to receive free or subsidized medical care, financial aid, and food support from government programs, NGOs, or charity organizations and all of which might enable them to adapt with the mental struggle after the illness period. On the contrary, individuals with a 10,000 to 20,000 BDT income may aspire to a better quality of life but still face economic constraints, leading to greater frustration and stress when dealing with unexpected medical costs and income loss. Moreover, the 10,000–20,000 BDT group may experience higher stress and anxiety because they are in a financially precarious position-not wealthy enough to afford private healthcare but also not poor enough to receive full government or NGO support.

It is dictated in a previous study that prolonged immobilization due to illness, hospitalization days, absence from job or workplace might be

responsible for mental illness following dengue infection [31]. This concept is supported by our study findings. Our study indicated that hospitalization days, leave of work for illness and treatment related total cost; these are strongly associated with post dengue depression. According to our study, participants having hospitalization days more than seven days are five times more trend in post infection depression as compared with those whose hospitalization days were less than five days (B=1.61, SE=0.66, OR= 5.0, p =0.01) *(Table-4).* The Bangladeshi tertiary medical college hospitals are often overcrowded specially during the dengue outbreak period, participants may fight with financial burden with limited resources, additionally many Government hospitals in Bangladesh restrict visiting hours due to high patient loads, making it harder for family members of the patients to provide emotional support, dengue wards are often filled with patients, and noise levels can be high, affecting sleep and recovery, inadequate bed availability may force some patients to stay on the floor or shared beds, increasing physical discomfort and stress on top of sleep deprivation, on the other hand the more the hospitalization the more the thought of their recovery .Combinedly all of these factors might make them vulnerable in such of state that depression might persist even after the post infection state. Surprisingly, the more the leave of work for illness and estimated cost for treatment, the less trend of depression during the post infection state. In our findings, participants who availed leave from their work more than twelve days have 89% less trend of depression (B= -2.20, S.E= 0.89, OR= 0.11, p=0.005) and participants who availed leave of work for seven to twelve days have 69% less trend of depression (B= -1.17, S.E =0.42, OR=0.31, P=0.01) *(Table 4)* during their post infection period as compared with those who availed their leave of work less than seven working days. There might be a possible explanation behind these findings that: taking sufficient leave may help ensure proper physical healing, reduced work stress, better social support, and improved mental resilience-all of which reduce the likelihood of post-dengue depression. On contrary, returning to work too soon after dengue can be mentally and physically overwhelming and Dengue causes severe fatigue, muscle pain, and weakness, which can persist for weeks after hospital discharge. So, if a patient takes sufficient leave, they can rest properly, allowing the body to recover fully and reducing the physical exhaustion that contributes to depression. A study from Pakistan illustrated the financial ability and treatment cost for dengue illness as the important associated factors for mental instability like depression [32]. Our study strengthens this finding but astonishingly, the more the estimated treatment related cost, the less the trend of depression in our study. According to our result, participants with treatment cost more than ten thousand BDT are 75% less prone to depression during their post infection period compared with those who had treatment cost of 5000 BDT during their illness (B= -1.38, S.E = 0.54, OR =0.25, P= 0.01) *(Table 4).*There might be a possibility that Patients who can afford the out-of-pocket expenses for medications, tests, and supportive care (outside what the hospital provides) experience less financial stress, reducing depression risk and they don't have to worry about borrowing money or job loss. Additionally, higher spending often means patients and families feel they have done everything possible for a full recovery, reducing health-related anxiety and depression during the post infection period.

Clinical implications

The study encourages physicians to clinically evaluate the psychological manifestations of dengue patients following discharge from the hospital. Furthermore, these practices are often left neglected and least clinically focused in low- and middle-income countries where the dengue outbreak occurs most prominently. In dengue season, various public sector healthcare centers and hospital become dedicated for dengue infection screening. We recommend policymakers to also devise ways to psychologically evaluate each patient soon after their discharge from hospital to improve their quality of life during the post infection state.

Strength and limitations

To our knowledge, the present study is the first one to measure the prevalence as well as to explore the associated factors of depression during post dengue infection state among Bangladeshi population. This is one of the first studies that in-depth elaborated the impact of different sociodemographic, behavior and treatment related factors on depression during the post infection period in the Bangladeshi dengue population. To pave the paths for future studies in this area, we acknowledge several limitations of our study in-spite of having the nobility. Our major part of the data was from tertiary hospitals where patients from low- or middle-income families usually take treatment for their illness. Future studies may include participants acquiring treatment from private hospitals as well to see whether public hospital setting care and income are impacting the relationship during the post infection period. The sample size was not adequate. We were able to include data from 246 patients for analysis during the outbreak when our study was conducted. Thirdly, further qualitative evaluation by a psychiatrist could evaluate the diagnosis of depression during the post infection period. These aspects can be worked upon in future studies to optimize patient care in this area.

Conclusion

Post-dengue depression is a significant yet often overlooked consequence of dengue infection, particularly among women and economically vulnerable groups. Addressing mental health as part of post-dengue care is essential for improving long-term recovery outcomes and overall well-being of affected individuals. Early identification of at-risk patients and timely psychological interventions can prevent further deterioration in mental health. Strengthening post-discharge follow-up with integrated mental health services is crucial to support full recovery in dengue-affected populations.

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Authors Contribution

A.P - Conceptualization, data collection

I.J - Conceptualization, data collection, manuscript proof reading

A.S.J - Conceptualization, manuscript drafting, data analysis, reporting

A.G - Data collection, Manuscript drafting

S.N.K- Data collection, data analysis and manuscript proof reading

A.S.P- Data collection, Data entry and cleaning, data analysis

M.M. - Data collection, Data entry and cleaning, data analysis

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