A Comprehensive Study on Knowledge, Attitude and Practices Concerning Dengue Fever Among Inhabitants of Dhaka, Bangladesh

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Research Article

Title : A comprehensive Study on Knowledge, Attitude and Practices concerning dengue fever among inhabitants of Dhaka, Bangladesh

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Abstract

Background

Each year around the globe, thousands of people are affected by Dengue fever. Dhaka is a very highly populated city. The rate of Dengue transmission in Dhaka is increased over the year. Authority takes numerous steps to reduce the Dengue transmission. Nevertheless, without proper Knowledge of folks on Dengue government may not alone prevent Dengue. In these circumstances, this paper will find out the Knowledge, Attitude and Practice among Dhaka people. This study will help policymakers access the KAP among the people and set goals to improve the Dengue prevention program.

Methods

This study determines 57 questions under three components. Preliminary data were collected from Dhaka dwellers throughout the internet survey using convenience sampling is a non-chance sampling method. The mean value of variables and Standard deviation (SD) is used to investigate the characteristics of the Socio-demographic profile of the sample. The data were analyzed using the Pearson correlation and regression method.

Results

The study finds that in Dhaka, urban people have much better KAP of Dengue than people who live in the countryside area. Between Male and Female at Dhaka, male does have much better KAP rather than women. Gender influences the practice level regarding DHF but does not affect the Knowledge and Attitude towards DHF. That means people's Income can change the knowledge level on DHF. People affected by Dengue fever at any stage of life have a better understanding of KAP than people do who are never affected by Dengue fever. People affected by Dengue fever at any stage of life have a better understanding of KAP than people do who are never affected by Dengue fever.

Conclusion

This study will help the dengue prevention in Dhaka and will help to increase the KAP towards the general people

Keywords: Knowledge, Practice, Attitude, and KAP, Dengue, Dengue fever, Dhaka,

Background

Dengue fever (DF) brought about by contamination with any of the four-dengue infection (DENV) serotypes and has become the main mosquito-borne viral sickness in people (**Harapan et al., 2018**). Dengue is progressively perceived as one of the world's major irresistible sicknesses. Dengue vectors, human information and human conduct have been accounted for to assume a significant part in transmitting the illness (**Ibrahim et al., 2009**). Dengue fever (DF) is an environment-touchy mosquito-borne viral contamination that has arisen as significant general wellbeing trouble. Around the world, there are an expected 390 million dengue diseases per year1, and notwithstanding a danger of disease existing in one hundred and twenty-nine countries, 2 70% of the natural weight is in Asian nations (**Rahman et al., 2020**).

Bangladesh is arranged in humid and sub-tropical areas like other Southeast Asian (SE) nations and has become an appropriate environment for the dengue vector and its expanded transmission. Dengue virus (DENV) infection has globally become a significant public health concern since the incidence of dengue fever (DF) has increased more than 30-fold over the last five decades (**WHO 2009).** Aedes mosquitoes are very disturbing and have made an enormous weight in dreariness and mortality with the deficient portion of assets under the DC Operational Plan of the Health, Population, and Nutrition Sector Program (**Tabassum & Taylor-Robinson, 2019**).

Dengue fever (DF) is measured as a severe infectious sickness caused by the dengue virus and transmitted by the Aedes aegypti mosquito (**Mahdy et al., 2018**). Dengue is not new in Bangladesh, and it is the study of disease transmission that has been a worry since the primary flare-up was accounted for in 2000. Dengue caused an extreme general wellbeing concern, following an unexpected flare-up in 2000 where around 5,551 cases and 93 passings happened in the country. During the dengue episodes from 2000–2017, the two sorts of vectors (Aedes aegypti and Aedes albopictus) were recognized in Bangladesh (**Mutsuddy et al., 2019**).

Understanding the Knowledge, Attitude and Practice (KAP) of the overall neighborhood dengue contravention helps give information for great fundamental organizing and drew locally with dengue control. The data on dengue preventive measures is basic to lessen the passing rate; notwithstanding, correspondence among individuals to diminish Dengue is yet an issue.

Literature review

(**Zamri et al., 2020**Illustrating the central sources in spreading prosperity messages to everyone are through the creative work of an informational game plan to improve the demeanor and Practice of viable control measures among people since their underlying ages. Thus, this examination was significant for understanding the KAP concerning Dengue. (**Herbuela et al., 2019**) survey and analyze the KAP of pediatric patients and grown-up patients with DF, pediatric patients with DF and youth control and grown-up patients with DF and grown-up controls.

(**Harapan et al., 2018**) contemplated the current examination was to evaluate and analyze the KAP among local gatherings in Aceh, to plan mediation methodologies for a viable dengue counteraction program. (**Rahman et al., 2020**) gives valuable data to limit working in college settings for environmental change transformation, DF control and counteraction as explicit to Bangladesh. **Hairi et al. (2003)** used association assessment to take a gander at the connection between demographical characteristics and KAP regarding Dengue in four towns of Kuala Kangsar of the territory of Perak in June 2002. The outcome from the investigation showed that the demographic factors were not altogether connected with information, mentality, and practices; however, the cross-organization showed a critical relationship between Knowledge and disposition yet no tremendous relationship among information and techniques.

Rozita et al. (2006) also utilized connection examination to notice the connection among information and practice; information and demeanor; mentality, and approach in an investigation led in Kampung Datok Keramat, Kuala Lumpur. **Leong (2014)** had the option to set up that information connected with age, identity, instructive level, and demeanor were associated with nationality and informational status, while rehearses were related to identity and marital status in an investigation Rembau and Bukit Pelanduk, Sembilan. **Al-Zurfi et al. (2015)** utilized simple logistic regression to evaluate the relationship of information and race, information and financial status, information and neighborhoods. The investigation showed that there was no critical relationship between Knowledge and all the sociology-segment factors.

Materials and Method

Study area profile

In this article, the articulation "Dhaka City" signifies "Dhaka Metropolitan Area (DMA)", which is found almost at the geographical focal point of Bangladesh at 23°43′0″ North extension and 90°24′0″ East longitude, on the eastern bank of the Buriganga River. DMA covers an all-out region of around 1530 km2. DMA's focal part is divided as Dhaka City Corporation (DCC), roughly 360 km2 in the zone. There are 92 wards in DCC (**Ahmed et al., 2013**).

Dhaka has a long history returning around 400 years. The city went through times of advancement and decline from its beginning as a city with a touch of people to its current status as a hugely expanded city. Indeed, Dhaka City's progression started from the southern stream bank in the pre-Mughal period, a region presently a piece of Old Dhaka. By then, the city connected westward and the north during the Mughal and British periods. (**Ahmed et al., 2014**).

The number of inhabitants in the metropolitan domain of the capital city Dhaka was around 17 million. The urban people in Bangladesh is rapidly growing, as demonstrated by 3.4% yearly urban people advancement in assessment with 1.2 rate people improvement in the whole country in 2015 (**Khalequzzaman et al., 2017**)

Methods

Study design and setting

The study was alienated into two stages: a comprehensive review of the published and unpublished literature on a set of KPA on DF. Only quantitative studies were analyzed, as it was essential to determine the objectives and variables to identify the factors affecting the KPA about DF (**Radhakrishna, 2019**). However, the study was mainly based on primary data, and to complete the task, preliminary data were collected from Dhaka dwellers throughout the internet. Recruiting respondents over the internet, mainly through social media, can only be described as a non-probability, convenience sample.

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Convenience sampling is a non-chance sampling method in which samples are decided on from the population only as of the ready to be had to the researcher. It is suitable to test a pattern that represents the population.

In a few studies, the community is too large to look at and forget the whole populace. It is one reason researchers depend on convenience sampling, which is the maximum not unusual non-possibility sampling technique, because of its pace, price-effectiveness, and ease of availability of the sample (**Anderson et al., 2015**).

Study instrument

To smooth the interviews, a fixed of authenticated and pretested questionnaires containing questions connected to asset index (**Filmer & Pritchett, 1999**) and KAP concerning DF (**Dhima**l **et al., 2014**) was cast off. Before the questionnaire was finalized in the research, it was

verified for internal consistency amongst 50 accomplices in three regencies. The data from these applicants were not involved in the final study. Cronbach's Alpha of 0.7 was measured to mirror tolerable internal reliability

Study design and setting
This study determines 50 questions under three components. Besides, this study also studies socio-demographic data. The study explores the data of Age, Gender, Monthly income, Family member, and Affected by Dengue in the socio-demographic section; for the Knowledge, the assessment author used a nominal level of measurement. For knowledge assessment, the data was coded as "Right" and "Wrong". For Attitude valuation, A Likert scale fluctuating from "1" = strongly agree, "2" = agree, "3" = Neutral, "4" = Disagree, and "5" = strongly disagree, was utilized to find the valuation of Attitude regarding Dengue. Here the level of measurement was ordinal. Finally, the author used a nominal level of measurement to assess Practice where the data was coded as "ever" and "never".

Statistical analysis
The author uses SPSS 21.0 to examine essential information. The investigation utilized the Pearson Correlation as well as relapse examination to dissect the information. By exhausting the Pearson correlation investigation, the creators distinguish the relationship among the factors. Pearson connection is a famous equation to decide the connections between factors appropriately. Additionally, from past examinations, the creators discover the Pearson connection is a good recipe. The creators utilized the accompanying condition of Pearson Correlation to decide the connections between the factors.

$$r = \frac{n\sum xy - \sum x . \sum y}{[\sqrt{[n\sum x^2 (\sum x)^2]} . [\sqrt{[n\sum y^2 (\sum y)^2]}}$$

Here, r= Coefficient of Pearson's Correlation, = Sum of sets of qualities or scores, $\sum xy$ = Sum of the result of x and y, $\sum x$ = Sum of the x qualities $\sum y$ = Sum of they esteems (or y scores), $\sum x^2$= Sum of squares of x qualities, $\sum y^2$= Sum of squares of y esteems, $(\sum x)^2$= Square of the Sum of x qualities, $(\sum y)^2$= Square of the Sum of y esteems (**Adler & Parmryd, 2010**)

$$Y = \alpha + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \ldots + \beta i Xi$$

Here, Y is the dependent variable, α is the constant, βi (*i*= 0, 1, 2, 3,....., *n*) is the regression coefficients, *Xi* (*i*= 0, 1, 2, 3,....., *n*) is the independent variables, and *n* is the number of the independent variable (**Parvez & Rana, 2021**). For the KAP analysis, independent variables β1, β2, β3, β4, β5 are education, age, gender, monthly income, family type and affected by Dengue respectively. The dependent variable are the KAP (Knowledge, Attitude and Practice).

Study Analysis
Reliability Test
For the most part, scientists practice a measurable mainstream strategy, Cronbach's alpha, the trustworthiness of variables scales made or expected for any assessment (Taber, 2017). Creators also use Bartlett's ball test to measure the enduring nature of the Survey. A higher evaluation of Cronbach's Alpha strategies higher persistent nature of the Survey. (Yin et al., 2018). For the

present situation, the Cronbach's Alpha evaluation is (0. 724), recommending that it is dependable (Table-1).

The association of various reasonable variables assessed has a value that reach between 0 to 1. For a proper reliable test, the examination required a KMO-MSA test with an extent of ≥ 0.5 with the possibility worth (sig.) ought to be <0.05 (Saraya et al., 2018).Bartlett's ball test and KMO test show that the factors are suitable for the positive factor study, having a critical degree of 0.00. Then again, in this investigation, the estimation of the KMO coefficient is 0.7002 (Figure-2). That implies that the deciding factors of the examination are reliable.

Characteristics of Study Population

The sample size of the study was n=1022. From Table-2, it is found that among the sample, 65.6% population lives in the village area, where 34.4% population stays in the village. By the mean value and SD value of city people on knowledge 1.73 (.12), attitude 1.77 (.27) and practice 1.81 (.16) of Dengue is much better than people who live in the village area. As the mean value is more significant and the SD value is lesser in city people. That means city people much a better KAP than the people who live in the village area.

From the study data, the author found that among 1022 sample, 55.7% are female, and 44.3% are male. The value of mean score and SD on Knowledge 1.73 (.11), attitude 1.76 (.25), and practice 1.81 (.14) of male, which suggests that male has a better KAP than women in Dhaka. For family type, the mean value of Joint family is excellent in Knowledge (1.73), Attitude (1.77) and Practice (1.81) than the nuclear family. The SD value also suggests that the joint family has much better KAP knowledge than the nuclear family. In Dhaka, the sample author found that 50.1% population live in a nuclear family, and 49.9% live in a joint family.

Among the population, 9.4% of people belong to the age group below 16. The percentage of age group 16-25 is 19.7%. On the other hand, both age group 26-35 and 36-45 belongs to the rate of 21.5%. The age group of 46-55 is 17.3% in the sample. Finally, 10.6% of people are in the age group of above 56. The mean value among the age group is highest at the age group of 46-55 and above 56 years older people. Both have the mean value 0f 1.729.

On the other hand, in the attitude part, the age group of 26-33 years old does have the better mean value (1.777) among all the age groups. Finally, 46-55 years old people have a better mean score (1.84) on Practice among all the age groups. Among the population, 48.2% people have never been affected by Dengue, and the rest of the people, 51.8%, have been affected by Dengue. The mean value of KAP is excellent at the people affected by DF, and the SD value is less in every section than who did not affect DF.

Knowledge assessment regarding Dengue

From Table-3, it is found that 86% of people can answer correctly, that mosquitoes can transmit dengue hemorrhagic fever DHF virus. When Aedes mosquitoes can transmit dengue hemorrhagic fever DHF virus, 93.2% of people can give the correct answer. Moreover, 89% of people can answer correctly. Food and Drink Can Transmit Dengue Hemorrhagic Fever Virus. In the section of Mosquitoes That Carry Dengue Hemorrhagic Fever Virus Breed or Lay Eggs in stagnant. Besides, 95% of people can give the correct answer. The Use of nets on windows or mosquito nets can reduce mosquito bites in the community 86.1% can give the correct answer. 84.9% of people give the correct answer on mosquito spray (for example, aerosol) can reduce

mosquitoes carrying dengue hemorrhagic fever. At the question of Closing, the water reservoir tightly can reduce the dengue virus mosquito 90.2% of people gave the correct answer. 79.3% of people gave the correct answer of DHF cases can only occur in the rainy season. Finally, only 29.4% of people can answer correctly when mosquitoes carrying the DHF virus suck blood in humans.

Figure-3 shows that almost 42% of respondents respond that they get the information on DHF from Television. By reading the newspaper, 38% of the respondent of the sample get the info regarding DHF. Move over, 7% of respondents get it from the Government advertising poster, and 10% get it from friends and family. Finally, 5% responded to get the info from the hospital's health worker and 8% from health workers in community centers.

Table-4 shows that the β and p (Sig. Level) values for seven independent grand variables are (e.g., Living area, Gender, Family type Age, Income, Affected by Dengue) within the Dhaka area with a dependent variable of Knowledge. β = -.004, p = .584; β =. -.007, p = .380; β = .006, p = .425; β = .001, p = .088; β = .005, p = .032; and, β = .006, p = .003. The regression consequence displays that the Living area (either urban or rural) has a negative β value not significant statistically. Similarly, Gender and age also have a negative β value and Gender has a p-value that is greater than 0.05. That means Gender, Age, and Living area do not affect the Knowledge of people regarding Dengue. However, the Family type has a positive β value but it does not have a significant p-value. That is why Family type does not affect the Knowledge of people regarding Dengue. On the other hand, Income and Affected by Dengue have a positive beta value with a significant p-value. That means Income and Affected by Dengue do have a significant influence on the Knowledge of people regarding Dengue.

Table-5 shows that the grade of correlation, nevertheless, differs among the variables with the Knowledge of respondent regarding Dengue having the highest correlation of 1 tailed by Living area (.032), Gender (-.029), Family type (.033), Age (-.017), Income (.077) and Affected by Dengue (.030). The study discovers that the Living area, Income, and Affected by Dengue positively correlate with these consequences. The significant value (p) of Living area, Income, and Affected by Dengue is less than 0.05 (2-tail) and 0.01 (one tail). On the other hand, the rest of the variables have a p-value greater than 0.05 or 0.01. These correlation values show that the Dhaka dweller's Living area (rural or urban) affects Dengue's Knowledge. Between Living area and knowledge level, the correlation value is 0.032, and the significant matter is 0.040. That indicates that between these two variables, there is an affirmative and substantial correlation among these variables. This relationship between Income and Knowledge shows that Income has a vital influence on Knowledge in Dhaka. Finally, Affected by Dengue is positively correlated with the Knowledge regarding Dengue with a positive correlation value of .030 with a significant level of 0.005.

Attitude assessment regarding Dengue

Table-6 shows that the β and p (Sig. Level) values for seven independent grand variables are (e.g., Living area, Gender, Family type Age, Income, Affected by Dengue) within the Dhaka area with a dependent variable of Attitude within the Dhaka area. β = .009, p = .002; β =. .021, p = .227; β = -.007, p = .686; β = .005, p = .366; β = .017, p = .002; and, β = -.013, p = .453. The regression consequence displays that the Living area (either urban or rural) has a positive β value which is significant statistically (p-value is less than 0.05). Therefore, from the value, it is found

that living area has a significant and positive impact on Attitude. Similarly, Gender and age also have a positive β value but have a p-value that is greater than 0.05. That means Gender and Living area does not affect the Attitude of people regarding Dengue. However, Family type and Affected by Dengue have a negative β value and they do not have a significant p-value. That is why Family type and Affected by Dengue do not affect the Attitude of people regarding Dengue. On the other hand, Income has a positive beta value with a significant p-value. That means Income does have a significant influence on the Attitude of people regarding Dengue.

Table-7 shows that the grade of correlation, nevertheless, differs among the variables with the Practice of the respondent regarding Dengue having the highest correlation of 1 tailed by Living area (.034), Gender (.068), Family type (.046), Age (-.057), Income (.096) and Affected by Dengue (.043). The study discovers that Gender and Income are positively correlated with these consequences with Practice. The significant value (p) of Gender and Income is less than 0.030 (one-tail) and 0.02 (two-tail). On the other hand, the rest of the variables have a p-value greater than 0.05 or 0.01. These correlation values show that the Dhaka dweller's Gender affects Practice towards Dengue. The relationship between Income and Practice (0.096) with p value (0.002) shows that Income has a strong and positive correlation with Attitude in Dhaka.

Assessment of Practice regarding Dengue
The β and p (Sig. Level) values for seven independent grand variables are (e.g., Living area, Gender, Family type Age, Income, Affected by Dengue) within the Dhaka area with a dependent variable of Attitude within the Dhaka area. β = .019, p = .006; β =. .020, p = .008; β =.013, p = .195; β = -.005, p = .131; β = .010, p = .002; and, β = .010, p = .317 (Table-7). The regression consequence displays that the Living area (either urban or rural) and Gender has a positive β value which is significant statistically (p-value is less than 0.05). Therefore, from the value, the author found that living area and Gender have a significant and positive impact on Practice regarding Dengue disease. Similarly, Family type and Age also have a positive β value but have a p-value that is greater than 0.05. That means Family type and Age does not affect the Practice of people regarding Dengue. However, Affected by Dengue have a positive β value and it does not have a significant p-value. That is why Affected by Dengue does not affect the Practice regarding Dengue. On the other hand, Income has a positive beta value with a significant p-value. That means Income does have a significant influence on the Practice of people regarding Dengue.

The grade of correlation, nevertheless, differs among the variables with the Attitude of the respondent regarding Dengue having the highest correlation of 1 tailed by Living area (.036), Gender (.042), Family type (-.022), Age (.034), Income (.106) and Affected by Dengue (-.028). The study discovers that Age and Income are positively correlated with these consequences with Attitude (Table-8). The significant value (p) of Age and Income is less than 0.05 (2-tail) and 0.01 (one tail). On the other hand, the rest of the variables have a p-value greater than 0.05 or 0.01.

These correlation values show that the Dhaka dweller's Age affects Attitude towards Dengue fever. Between Age and Attitude, the correlation value is 0.34, and the significant matter is 0.030. That indicates that between these two variables, there is an affirmative and substantial correlation among these variables. The relationship between Income and Attitude (0.106) with p value (0.001) shows that Income has a strong and positive correlation with Attitude in Dhaka.

Conclusion

The study finds that in Dhaka, urban people have much better KAP of Dengue than people who live in the countryside area. Living area (either city or village) does not affect Dhaka dwellers' Knowledge, Attitude, or Practice. On the other hand, the Living area is significantly and positively correlated with Knowledge but does not correlate with Attitude or Practice. That means people's living area can change the knowledge level on DHF. Between Male and Female at Dhaka, male does have much better KAP rather than women. Gender influences the practice level regarding DHF but does not affect the Knowledge and Attitude towards DHF.

Moreover, Gender is positively correlated with the practice level of the dwellers. Joint family members do have a better KAP knowledge rather than nuclear family members. Family type (Nuclear or Joint) does not influence either on KAP regarding DHF or does not correlate with KAP. Age is positively correlated with Attitude but does not have any correlation with Knowledge and Practice. Moreover, age does not influence the KAP regarding DHF. Income does have a positive and influence on KAP. That means the level of Income can change the status of KAP regarding DF.

Moreover, Income is correlated positively with KAP. That means people's Income can change the knowledge level on DHF. People affected by Dengue fever at any stage of life have a better understanding of KAP than people who are never affected by Dengue fever. The regression result shows that Dengue affected only has an influence of Knowledge of people but does not have any impact on Attitude or Practice. Nevertheless, this affected by Dengue is also positively correlated with Knowledge. By this study, the level of KAP is being found out. The policymakers can make a step forward to prevent Dengue in Dhaka city by using this study. The factors, which should be, focus on regarding the KAP level, are being found out.

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Declarations :

Ethical Approved and Consent to participate : Approved by Yan'an Hospital

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Consent for Publication : Not applicable

Availability of Data and materials : The data sets used and analyzed during the current study are available from the corresponding author on reasonable request.
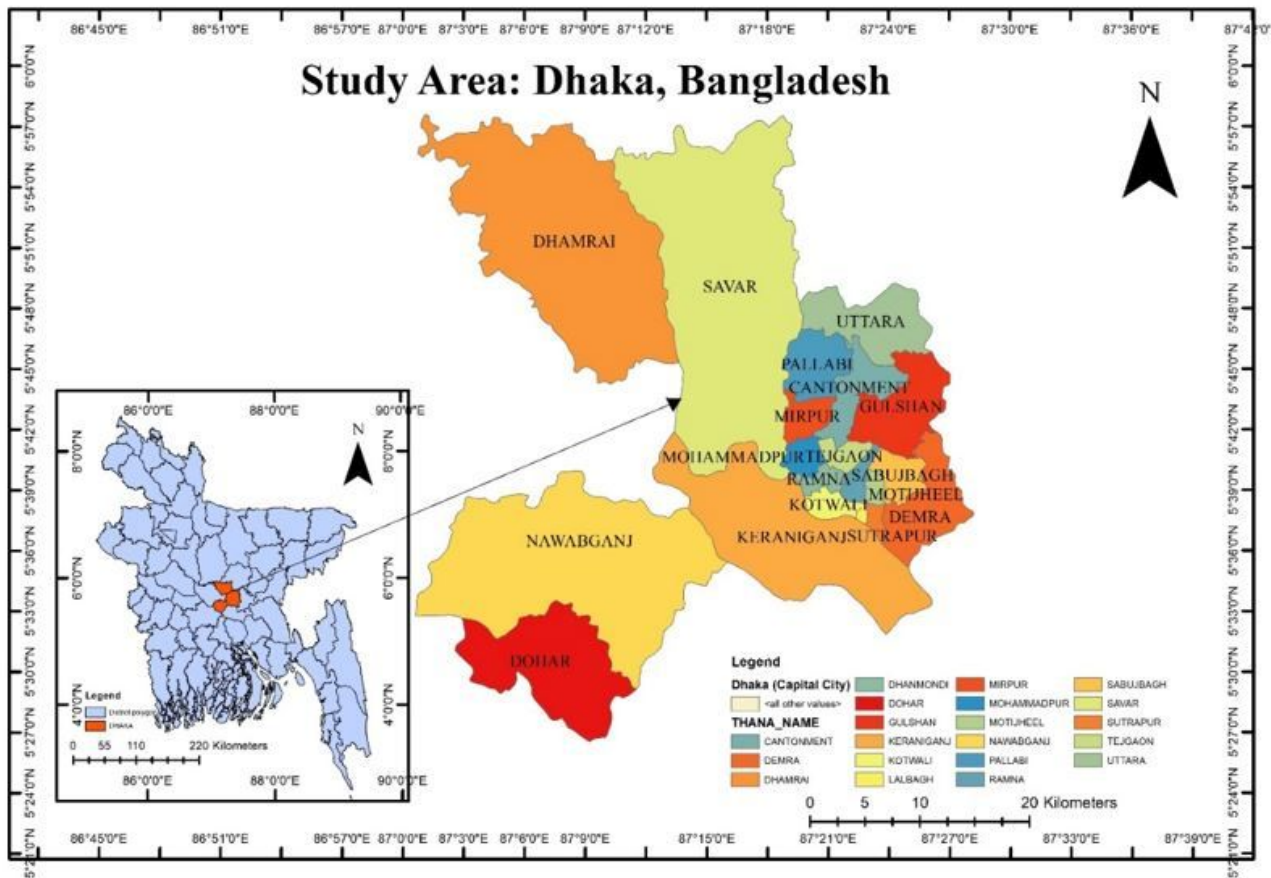
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Figures

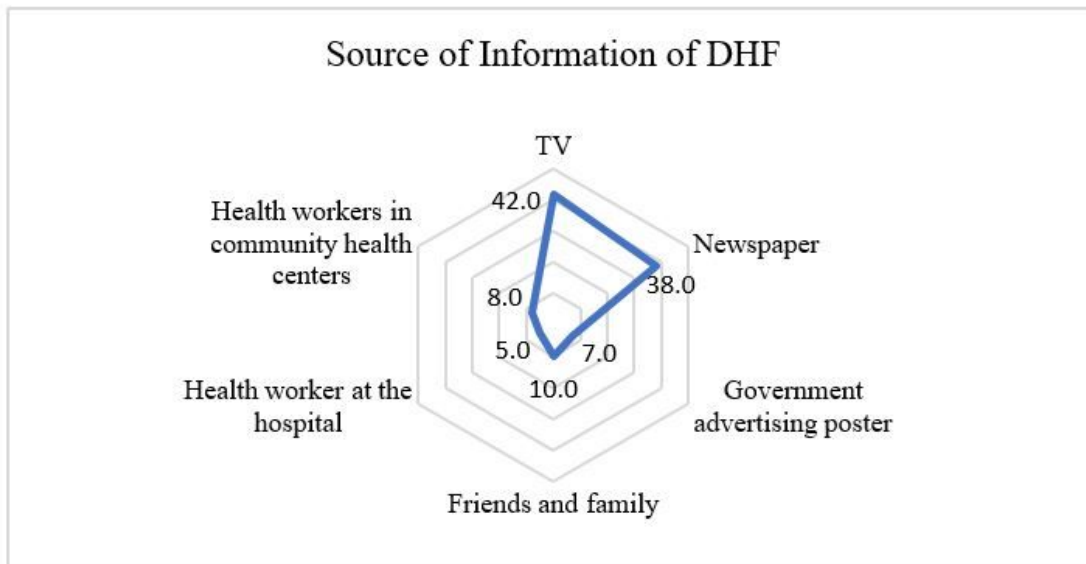Source: Author, 2021

Figure 1

Study area profile Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.

Scree Plot
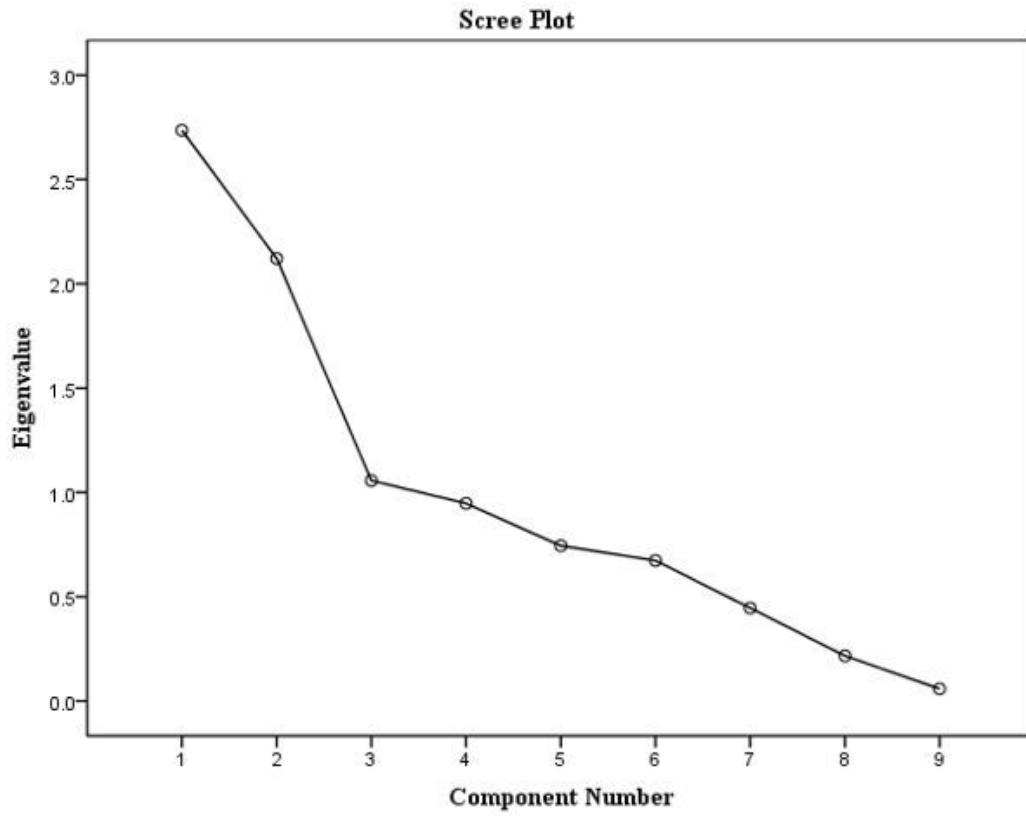
Source: Author, 2021

Figure 2

Bartlett's ball test and KMO screen plot

Source of Information of DHF

Source: Author, 2021

Figure 3

Source of Information regarding DF among respondent