CHAPTER – 5

CHAPTER - 5

UTILISATION OF HEALTHCARE SERVICES OF PRIMARY HEALTH CENTRES IN THE STUDY AREA

This chapter draws an outline on utilisation of healthcare services of primary health centres in the study area. It has also assessed the influence of different independent variables on dependent variable with regard to utilisation of health care services of Primary Health Centres among the Bodo community.

5.1 Utilisation Level of OPD and IPD Services in Baksa District and Six Selected PHCs

In this section, the pattern of utilisation of Out-patient Door and In-patient Door service in Baksa district and the six selected PHCs under study has been highlighted based on the secondary sources i.e. e-resource of National Health Mission(then National Rural Health Mission) website of Assam.

The pattern of utilisation of OPD services for the period of 8 years at the district level has been found up and down as depicted in Table 5.1. The utilisation of OPD services in six selected PHCs has been found proportionately higher than the district level. It has been found that utilisation of OPD services was 6,29,181 in 2012-13. Data had not been available for the whole year for 2014-2015 at source; hence it has been left out from comparison. At the district level, it has been observed that except 2014-15, OPD service utilisation in all the subsequent years till 2019-20 is found less than the initial year 2012-13. The percentage share of the six selected PHCs in case of OPD utilisation is found maximum in 2017-18. In the last two years, the percentage share of OPD of six selected PHCs is found 18.67% which is less than the 19.28% of 2017-18 (Shown in Table 3.25). It has been found that six selected PHCs share 18.42% of the total OPD service utilisation of the district.

Table 5.1: Utilisation of OPD in Baksa District and Six Selected PHCs

Year	Baksa	Six Selected PHCs	%age share of selected Six PHCs
2012-13	629181	98451	15.65
2013-14	695953	122581	17.61
2014-15	377198	55712	14.77
2015-16	578246	87312	15.10
2016-17	623830	83949	13.46
2017-18	572647	110417	19.28
2018-19	601416	112261	18.67
2019-20	565330	104126	18.42

Source: https://nhm.assam.gov.in/information-services/detail/opdipd

Availability and accessibility are necessary steps in utilisation but not sufficient to ensure coverage (Leslie and Gupta 1989)[1]. Among the selected six PHCs, OPD service utilisation has been found maximum in Kumarikata SD (33,167) under Tamulpur BPHC. At the same time, the Golagaon PHC has the least OPD utilisation (7,207), as shown in Annexure 5.

Table 5.2 shows the level of utilisation of health care services in Baksa district and six selected PHCs under study. It has been found that utilisation of IPD services was 12,646 in 2012-13. Comparing to 2013-14, in the period of 2015-16 has shown a fall in utilisation selected six PHCs. Again, it is to be stated that data was not available for the whole year for 2014-2015 at source; hence it has been left out from comparison. A continuous increase in IPD service utilisation has been noticed from 2016-17 to 2019-20, the rate of increase of IPD utilisation has been found to be 31.75% in 2019-20 considering the initial year (2012-13) as the reference year at the district level(shown in Table 3.26).

Similarly, IPD service utilisation in six selected PHCs, the maximum record (3,283) was found in 2013-2014 over 2012-13 to 2019-20. Therefore, comparing with the latest year of available data till 2019-20, it is observed that the level of utilisation of IPD services from select PHCs recorded a decrease and stood at 30.3% in 2019-20 compared to 2013-14. The percentage share of six selected PHCs (27.09 percent) has been found highest in 2013-14. It has become

only 13.59 percent in 2019-20. It is found that the percentage share of IPD utilisation has been continuously falling since 2014-15. However, the utilisation of IPD of PHCs may be affected in 2019-20 due to Covid-19 pandemic.

Table 5.2: Utilisation of IPD in Baksa District and Six Selected PHCs

Year	Baksa	Six PHCs	%age share of Six selected PHCs
2012-13	12646	2343	18.53
2013-14	12120	3283	27.09
2014-15	6443	1503	23.33
2015-16	12489	2555	20.46
2016-17	13243	2602	19.65
2017-18	13736	2419	17.61
2018-19	16652	2472	14.85
2019-20	18528	2518	13.59

Source: https://nhm.assam.gov.in/information-services/detail/opdipd

Among the six selected PHCs under the study, Kumarikata has the maximum IPD service utilisation of 1,281, while Golagaon has recorded the lowest IPD cases of 83 only. (Shown in Annexure 6)

5.2 Empirical Data Analysis

In this section, affect of different independent variables which are considered for the study on utilisation of healthcare services of PHCs in the study area has been elaborated based on primary data. Model designed and specification of variables i.e. dependent and independent variables have been illustrated in Chapter 1.

In the analysis, out of total 502 nos. of sample households; a total of 436 households have been included those reported atleast one illness in the reference period. As mentioned in Chapter 1, the quantitative data have been analysed by using appropriate statistical methods like descriptive, bivariate and binary logistic regression analysis. The objectives of those analyses are to understand the

distribution pattern of the survey data in general; identify the relationship between the dependent and independent variables, and estimate the overall effects of independent variables on the use of Primary Health Centres healthcare services. Findings on the level of utilisation of the Primary Health Centres based on household survey, the households reported one or more illness case(s) in the family (436) during the reference period 2018 are included in the analysis.

The information has been collected at household level on age, sex, occupation, education from each member of selected households. Further, households reported of perceived illness, type of illness and perceived or observed severity of illness. Whether they visited Primary Health Centres or not also has been collected selected household under study. Moreover, details of every member suffering from illness of selected households also have been collected through the interview schedule. Therefore, illness cases reported by the households include all age groups- dependent and independent. For that reason, analysis of the behaviour pattern of utilisation of healthcare services of Primary Health Centres has been carried out on household level instead of individual level. Because the visit to Primary Health Centres for dependent group (minor and the above 65 years age) directly depends on the household heads rather than individual factors such as age, gender, occupation, education, etc.

5.2.1 Descriptive Statistics Analysis

Descriptive statistics of primary data have been presented to highlight the percentage distribution of frequency of the independent or explanatory variables included in the model. Descriptive statistics refers to the techniques and methods for organising and summarising information obtained from the sample. It describes the important features of given data. The mode is being only statistical measure of central tendency that can be used for categorical data. Therefore, mode has been used to present the central tendency that helps to find the greatest occurrence of the category of the variables for the data analysis for the study.

Table 5.3 presents the summary of descriptive statistics of the independent variables considered as the factors which may affect the visiting to the Primary Health Centres for the use of healthcare services under the study area.

Table 5.3: Summary of Descriptive Statistics of Independent Variables (n=436)

Variables	Category	Not Visited =No=0	Visited =Yes=1	Total	Mode
Distance	1= 0-1 Km 2= 2 - 3 Km 3= 4 Km & Above	56(36.6) 64(40.5) 74(59.2)	97 (63.4) 94(59.5) 51(40.8)	153 158 125	2
Opening hours	0=Not Convenient 1=Convenient	75(94.9) 119(33.3)	4(5.1) 238(66.7)	79 357	1
Religion	1= Bathouism 2= Hindu 3= Christian	143(47.5) 38(35.8) 13(44.8)	158(52.5) 68(64.2) 16(55.2)	301 106 29	1
Gender of Household Head	1=Male 0=Female	167(41.9) 27(73.0)	232(58.1) 10(27.0)	399 37	1
Age Group of Household Head (in Years)	1=Below 35 years 2=35-45 years 3= Above 45 years	30 (41.1) 62(41.9) 102(47.4)	43(58.9) 86(58.1) 113(52.6)	73 148 215	3
Occupation of Household Head	1=Govt. Employee 2= Farmer 3= Casual Labour 4=Business	31(68.9) 101(39.6) 38(38.4) 24(64.9)	14(31.1) 154(60.4) 61(61.6) 13(35.1)	45 255 99 37	2
Highest Educational level of household	1= Primary level 2=Under-matriculate 3=Matriculate 4= Higher Secondary 5=Graduate & above	6(28.6) 28(51.9) 58(50.4) 50(40.3) 52(42.6)	15(71.4) 26(48.1) 57(49.6) 74(59.7) 70(57.4)	21 54 115 124 122	4
MPCE (in₹)	1= Less than or equal to ₹1500 2=₹1501-3000 3= ₹3001 and above	101(38.4) 78(50.6) 15(78.9)	162(61.6) 76(49.4) 4(21.1)	263 154 19	1
Size of family	1=Small Family(1-3) 2=Medium Family (4-7) 3=Big Family (8 and above)	85(47.8) 98(42.2) 11(42.3)	93(52.2) 134(57.8) 15(57.7)	178 232 26	2
Standard of Living Index	1=Low SLI 2=Medium SLI 3=High SLI	103(39.9) 91(51.1) 0	155 (60.1) 87(48.9) 0	258 178 0	1
Anybody chronic illness	0=No 1=Yes	150(49.0) 44(33.8)	156(51.0) 86(66.2)	306 130	0
Anybody severe illness	0=No 1=Yes	147(39.2) 47(77.0)	228(60.8) 14(23.0)	375 61	0

Source: Field Survey

It has been found that out of 436 nos. of households having reported illness cases, a total of 153 households within the 0-1 km distance range of the nearest Primary Health Centres reported having at least one illness member; 97 households constituting 63.4% visited PHCs and 56 households constituting 36.6% not visited PHCs. Similarly, 2-3 km distance range of the nearest PHCs, a total of 158 households has been found under study; out of which 94 households constituting 59.5% visited PHCs and 64 households constituting 40.5% not visited PHCs. Similarly, 125 households reported illness cases in the distance of 4 km and above, of which 51 households constituting 40.8% visited PHCs and 74 households constituting 59.2% not visited PHCs. The maximum number of households having illness cases has been found within the 2-3 km range. It has been indicated by mode value found to be 158 households from the category coded as 2 (as shown in Table 5.3).

In case of convenient opening hours of PHCs, 79 households reported not convenient, of which 04 households constituting 5.1% visited PHCs while 75 households constituting 94.9% not visited PHCs. On the contrary, 357 households reported as convenient opening hours of PHCs, 238 households constituting 66.7% visited PHCs but 119 households constituting 33.3% not visited PHCs. The mode value has been found 357 and coded in category 2 that stands for convenient opening hours of the PHCs.

In case of the religion, 301 households reported their religion as Bathou. Thus, 158 households constituting 52.5% visited PHCs and 143 households constituting 47.5% not visited PHCs. Among a total 106 Hindu households, 68 households constituting 64.2% visited PHCs while 38 households constituting 35.8% not visited PHCs. 29 households belonging to the Christian, of which 16 households constituting 55.7% visited PHCs and 13 households constituting 44.8% not visited PHCs. The mode value is 301 that represent Bathou.

With regard to gender of Household Heads, 399 households are headed by males. 399 male-headed households, of which 232 households constituting 58.1% visited PHCs and 167 male-headed households constituting 41.9% not visited

PHCs. It has been found that 37 households headed by females, of which 10 households constituting 27.0% visited PHCs while 27 households constituting 73.0% not visited PHCs. The mode value has been found 399 that stand for male-headed households (shown in Table 5.3).

Regarding age group of household head, 73 heads of the households belong to the age group Below 35 years, of which 43 households constituting 58.9% visited PHCs while 30 households constituting 41.1% not visited PHCs. Similarly, 148 household head belong to age group of 35 - 45 years, of which 86 households constituting 58.1% visited PHCs while 62 households constituting 41.9% not visited. Again, 215 household head are from age group of above 45 years, of which 113 households constituting 52.6% visited PHCs and 102 households constituting 47.4% not visited PHCs. The mode value has been found 215 representing the age group of above 45 years (as shown in Table 5.3).

Regarding occupation of households head, it has been found that 45 households heads are Govt. employees, of which 14 households constituting 31.1% visited PHCs and 31 households constituting 68.9% not visited PHCs. Whereas 255 households heads are Farmers, of which 154 households constituting 60.4% visited PHCs and 101 households constituting 39.6% not visited PHCs. Likewise, 99 households heads belong to Casual Labour; of which 61 households constituting 61.6% visited PHCs and 38 households constituting 38.4% not visited PHCs. Again, 37 household heads belong to Business, of which 13 households constituting 35.1% visited PHCs and 24 households constituting 64.9% not visited PHCs. The mode has been found category 2 that represents Farmer with the greatest frequency of 255.

Regarding the Highest level of Educational of households, it has been found that 21 households have Primary level, of which 15 households constituting 71.4% visited PHCs and 06 households constituting 28.6% not visited PHCs. 54 households are having the highest level of education of Under-Matriculate, of which 26 households constituting 48.1% visited PHCs and 28 households constituting 51.9% not visited PHCs. It has been found that 115 households have

educational level Matriculate, of which 57 households constituting 49.6% visited PHCs and 58 households constituting 50.4% not visited PHCs. Similarly, 124 households have education Higher Secondary, of which 74 households constituting 59.7% visited PHCs and 50 households constituting 40.3% not visited PHCs. Further, 122 households have Graduate and above educational level, out of these 70 households constituting 57.4% visited PHCs and 52 households constituting 42.6% not visited PHCs. The mode value has been found 124 coded in category 4 that represents Higher Secondary level.

With regard to Monthly Per capita Consumption Expenditure (MPCE in ₹) used as a proxy of income of the family is classified into three categories as shown in Table 5.3 It has been found that 263 households are having MPCE less than or equal to ₹ 1500/-, of which 162 households constituting 61.6% visited PHCs and 101 households constituting 38.4% not visited PHCs. Similarly, 154 households have been found with MPCE in between ₹1501-₹3000, of which 76 households constituting 49.4% visited PHCs and 78 households constituting 50.6% not visited PHCs. Similarly, it has been found that 19 households are having the MPCE of equal to or above ₹ 3001/-, of which 04 households constituting 21.1% visited PHCs and 15 households constituting 78.9% not visited PHCs. The mode value has been found 263 as coded in category 1. It stands for less than or equal to ₹ 1500.00 Monthly Per capita Consumption Expenditure.

It has been found that 178 households belong to small family size (1-3 members), of which 93 households constituting 52.2% visited PHCs and 85 households constituting 47.8% not visited PHCs. While 232 households belong to medium size family (4-7 members), of which 134 households constituting 57.8% visited PHCs, on the other hand, 98 households constituting 42.2% not visited PHCs. Again it has been found that 26 households fall under Big Size Family (8 and above members), of which 15 households constituting 57.7% visited PHCs whereas 11 households constituting 42.3% not visited PHCs for the use of healthcare services. The mode value is found 232 as represented by category 2, i.e. medium size family that consists of 4-7 members.

Standard of Living Index (SLI) of the households has been another important independent variable considered to assess the effects on the utilisation of Primary Health Centre. The SLI has been categorised into three- Low, Medium and High. There has been found that 258(59.17%) household fall under Low Standard of Living Index category as per classification on the basis of score, from which 155 households constituting 60.1% visited PHCs while 103 households constituting 39.9% not visited PHCs. On the other hand, 178(40.82%) households fall under the Medium Standard of Living category, of which 87 households constituting 48.9% visited PHCs and 91 households constituting 51.1% not visited PHCs. However, as per categorisation of SLI, not a single household has been found in High Standard of Living category. The mode category is 1, which stands for Low Standard of Living Index category with the greatest frequency.

Regarding type of illness, 306 out of 436 households reported not having any chronic illness, of which 156 households constituting 51% visited PHCs and 150 households constituting 49% not visited PHCs. On the contrary, it has been found that 130 households reported having chronic illness, of which 86 households constituting 66.2% visited PHCs and 44 households constituting 33.8% not visited PHCs. The mode value has been found 306 with the greatest frequency of not having anybody chronic illness (shown in table 5.3).

With regard to perceived or observed severity of illness, as a total of 436 households reported illness cases in the family, 375 households have no severe illness according to perceived from their observation, of which 228 households constituting 60.8% visited PHCs and 147 households constituting 39.2% not visited PHCs. While 61 reported having severe illness, of which 14 households constituting 23% visited PHCs and 47 households constituting 77% not visited PHCs. The mode value has been found 375 with the greatest frequency of no severe illness (shown in table 5.3).

5.2 .2 Results of Bivariate Analysis

Bivariate analysis has been used to examine the association between dependent and independent variables under the study. Chi-squared tests have been used to examine the statistical significance of association between dependent and independent variables considered in this study.

The association between the distance and the utilisation of PHCs has been presented in table 5.4. The figures presented within the parenthesis refer to the percentage against the mentioned frequencies. The visit to PHCs has been affected by distance. It has been found that 63.4% households within 0-1 km utilised healthcare services of PHCs. Thus, it is observed that the nearer the distance higher the use of PHCs. On the other hand, farther the distance lesser the use of PHCs services by the households. This result has been found statistically significant and consistent.

Table 5.4: Visit to Primary Health Centres (PHCs) by Distance (n=436)

Distance	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
0-1 Km	56(36.6)	97 (63.4)	153
2 - 3 Km	64(40.5)	94(59.5)	158
4 Km & Above	74(59.2)	51(40.8)	125
Pearson Chi-Square		15.822	*p*=.000***

Source: Field Survey
Note: Figure in the parentheses indicates percentage, '***' -Significant at 1% level

Table 5.4 portrays that 153 households from 0-1 km distance reported having illness, of which 97 households constituting 63.4% visited PHCs while 56 households constituting 36.6% not visited PHCs. It has been found that 158 households from 2-3km; 94 households constituting 59.5% visited PHCs, 64 households constituting 40.5% not visited PHCs. Again for 4 km and above, 125 households have illness cases, out of which 51 households constituting 40.8% visited PHCs and 74 households constituting 59.2% not visited PHCs. The *p*-value obtained from the chi-square test has been found 0.000, which is less than

the threshold value (0.001) that indicates highly significant. Hence it can be inferred that distance impacts the households visiting to use healthcare services to PHCs. Thus, it is found that nearer to the PHCs higher the level of use of PHCs services in the study area and far from the PHCs lesser the use of PHCs.

Table 5.5: Visit to Primary Health Centres (PHCs) by Opening Hour (n=436)

Opening Hour of PHCs	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
Not Convenient	75(94.9)	4(5.1)	79
Convenient	119(33.3)	238(66.7)	357
Pearson Chi-Square	99.397	*p*=.000***	

Source: Field Survey'***' -Significant at 1% level

Table 5.5 portrays the convenient or not about the opening hours of the PHC in connection with the use of the healthcare services of PHCs. It is has been found that 79 out of 436 households having illness cases reported opening hours of PHCs not convenient, of which 4 households constituting 5.1% visited PHCs while 75 households constituting 94.9% not visited PHCs. However, 357 households out of the 436 households having illness cases reported opening hour of the PHCs is convenient. Among the 357, it has been found that 238 households constituting 66.7% visited PHCs while 119 households constituting 33.3% not visited PHCs.

The *p*-value obtained from the chi-square test is found significant at 1% level of significance. Hence it can be inferred that Convenient Opening Hour also may significantly impact the households towards visiting PHCs under study area.

Table 5.6: Visit to Primary Health Centres (PHCs) by Religion (n=436)

Religion	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
Bathou	143(47.5)	158(52.5)	301
Hindu	38(35.8)	68(64.2)	106
Christian	13(44.8)	16(55.2)	29
Pearson Chi-Square	4.316	*p*=.116	

Source: Field Survey

Table 5.6 reveals that 301 out of 436 households belief in Bathou and of which 158 households constituting 52.5% visited PHCs but 143 households constituting 47.5% not visited PHCs. Similarly, 106 households belief in Hindu, of which 68 households constituting 64.2% visited PHCs and 38 households constituting 35.8% not visited PHCs. Further, 29 households believe in Christian, of which 16 households constituting 55.2% visited PHCs while 13 households constituting 44.8% not visited PHCs.

The *p*-value obtained from the chi-square test is found 0.116 which indicates statistically nonsignificant. Thus, it can be inferred that religion may not impact the visiting to PHCs under the study area.

Table 5.7: Visit to Primary Health Centres (PHCs) by Gender of Household Head (n=436)

Gender of Household Head	Visited to Primary Health Centres (PHCs)		Total
	No	Yes	
Male	167(41.9)	232(58.1)	399
Female	27(73.0)	10(27.0)	37
Pearson Chi-Square	13.276	*p* =.000***	

Source: Field Survey'***' -Significant at 1% level

Table 5.7 describes the visit to PHCs for the use of healthcare services based on gender of households head in the study area. It has been found that 399 households headed by males, of which 232 households constituting 58.1% visited PHCs while 168 households constituting 41.9% not visited PHCs. On the contrary, 37 households headed by females, of which 10 households constituting 27% visited PHCs and 24 households constituting 73% not visited PHCs. The *p*-value obtained from the chi-square test is found 0.008, which is less than the threshold value (0.05). Hence it can be inferred that gender of household Heads impacts the households visit to PHCs for utilisation of healthcare services in the study area.

Table 5.8: Visit to Primary Health Centres (PHCs) by Age Group of Household Head (n=436)

Age Group Head	Visit to Primary Health Centres (PHCs)		Total
	No	Yes	
<35Age	30 (41.1)	43(58.9)	73
35-45	62(41.9)	86(58.1)	148
Above 45 years	102(47.4)	113(52.6)	215
Pearson Chi-Square	1.504	*p*=.472	

Source: Field Survey

Table 5.8 represents the visit to PHCs by age group of household heads for utilising the healthcare services when anybody suffered from illness during the reference period. It has been found that 73 household heads belong to below 35 years age group, of which 43 households constituting 58.9% visited PHCs while 30 households constituting 41.1% not visited PHCs. On the other hand, 148 nos. household heads are between age group of between 35-45 years, of which 86 households constituting 58.1% visited PHCs whereas 62 households constituting 41.9% not visited PHCs. Further, 215 household heads age has been found of above 45 years, 113 households constituting 52.6% visited PHCs and 102 households constituting 47.4% not visited PHCs.

The *p*-value obtained from the chi-square test is found 0.472 and found statistically not significant. Thus, it indicates that age group of the household head does have not impact on the visit to PHCs of the family member(s).

Table 5.9: Visit to Primary Health Centres (PHCs) by Occupation of Household Head (n=436)

Occupation of Household Head	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
Govt. Employee	31(68.9)	14(31.1)	45
Farmer	101(39.6)	154(60.4)	255
Casual Labour	38(38.4)	61(61.6)	99
Business	24(64.9)	13(35.1)	37
Pearson Chi-Square	21.022	*p*=.000***	

Source: Field Survey'***' -Significant at 10% level

Table 5.9 portrays occupational patterns among the heads of the sample households. It has been observed that 45 household heads are Government employees, of which 14 constituting 31.1% households visited PHCs while 31 constituting 68.9% households not visited PHCs. Similarly, 255 household heads are Farmer; of which 154 households constituting 60.4% visited PHCs while 111 households constituting not visited PHCs. It is found that the heads of 99 households are from Casual Labour group, of which 61 households constituting 61.6% visited PHCs while 38 households constituting 38.4% not visited PHCs. Further, 37 households head are Business by occupation, of which 13 households constituting 35.1% visited PHCs while 24 households constituting 64.9% not visited PHCs.

The *p*-value obtained from the chi-square test is significant at 1% level of significance. Hence it can be inferred that occupation of household heads impacts the visit to PHCs.

Table 5.10: Visit to Primary Health Centres (PHCs) by Highest Educational Level of Household (n=436)

Highest Education family	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
Primary level	6(28.6)	15(71.4)	21
Under-Matriculate	28(51.9)	26(48.1)	54
Matriculate	58(50.4)	57(49.6)	115
Higher Secondary	50(40.3)	74(59.7)	124
Graduate & above	52(42.6)	70(57.4)	122
Pearson Chi-Square	6.029	*p*=.197	

Source: Field Survey

The association between the visit to PHCs and the household's highest educational level has been examined using chi-square test and presented in Table 5.10. It has been observed that 21 households are having educational level Primary Level, of which 15 households constituting 71.4% visited PHCs while 6 households constituting 28.6% not visited PHCs. Likewise, 54 households are having educational level of Under-matriculate, of which 26 households constituting 48.1% visited PHCs while 28 households constituting 51.9% not visited PHCs. It is found that 115 households are having educational level of

Matriculate, of which 57 households constituting 49.6% visited PHCs while 58 households constituting 50.4% not visited PHCs. Again, 124 households are having educational level Higher Secondary, of which 74 households constituting 59.7% visited PHCs while 50 households constituting 40.3% not visited PHCs. Further, it has been found that 122 households are having educational level upto Graduate and above, of which 70 constituting 57.4% visited PHCs while 52 households constituting 42.6% not visited PHCs.

The *p*-value obtained from the chi-square test is 0.197 which is more than the threshold value of significance level. Hence it can be inferred that educational level does not have an effect on visit to PHCs in the study area.

Table 5.11: Visit to Primary Health Centres (PHCs) by MPCE (n=436)

MPCE (in ₹)	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
Less than or equal to ₹1500	101(38.4)	162(61.6)	263
₹1501-₹3000	78(50.6)	76(49.4)	154
₹3001 and above	15(78.9)	4(21.1)	19
Pearson Chi-Square	15.445	*p*=.000***	

Source: Field Survey
'***' -Significant at 1% level

Monthly Per Capita Expenditure (MPCE) is one of the basic socio-economic characteristics. It has been considered a proxy for households' income to examine the association with utilisation level of PHCs. Table 5.11 presents the use of healthcare services from PHC based on MPCE of the households. It has been found that 263 households are having the MPCE of equal to or less than ₹1500.00, of which 162 households constituting 61.6% visited PHCs while 101 households constituting 38.4% not visited PHCs. Similarly, 154 households are

having MPCE between ₹1501.00-₹3000.00, of which 76 households constituting 49.4% visited PHCs while 78 households constituting 50.6% not visited PHCs. Again, it has been found that 19 households are having MPCE of ₹3001.00 and above, of which 04 households constituting 21.1% visited PHCs while 15 households constituting 78.9% not visited PHCs.

The *p*-value obtained from the chi-square test has been found less than 0.001, indicating highly significant at 1% level of significance. It indicates that with the increase in the MPCE, the use of PHCs services decreases. Hence it can be inferred that MPCE impacts the visit to PHCs under the study area.

Table 5.12: Visit to Primary Health Centres (PHCs) by Family Size (n=436)

Household size	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
Small Family Size(1-3)	85(47.8)	93(52.2)	178
Medium Family Size (4-7)	98(42.2)	134(57.8)	232
Big Family Size(8 and Above)	11(42.3)	15(57.7)	26
Pearson Chi-Square	1.292	*p*=.524	

Source: Field Survey

Table 5.12 depicts the visit to PHC or not on the basis size of family. Family size is categorised into three categories: i) small family having 1-3 members, ii) medium family having 4-7 members and iii) big family having 8 or more members respectively. It has been found that 178 households belong to small family, of which 93 households constituting 52.2% visited PHCs while 85 households constituting 47.8% not visited PHCs. Again, it is observed that 232 households belong to medium family, of which 134 households constituting 57.8% visited PHCs while 98 households constituting 42.2% not visited PHCs. Further, it has been found that 26 households belong to big family; of which 15 households constituting 57.7% visited PHCs while 11 households constituting 42.3% not visited PHCs. It has been found that the proportion of visiting the PHCs for healthcare services has been found larger in case of family having more members.

The *p*-value obtained from the chi-square test has been found 0.524 which is above the significance level. Hence it can be inferred that family size does not impact the visit to PHCs in the study area.

Table 5.13: Visit to Primary Health Centres (PHCs) by Standard of Living Index (n=436)

Standard of Living Category	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
Low Standard of Living	103(39.9)	155 (60.1)	258
Medium Standard of Living	91(51.1)	87(48.9)	178
Pearson Chi-Square	5.351	*p*=.021*	

Source: Field Survey'*' Significant at 10% level

The association of Standard of Living Index (SLI) with utilisation of PHCs healthcare services has been shown in Table 5.13. It is found that 258 out of 436 households fall under low standard of living category, of which 155 households constituting 60.1% visited PHCs while 103 households constituting 39.9% not visited PHCs. On the contrary, 178 households fall under the medium standard living category, of which 87 households constituting 48.9% visited PHCs while 91 households constituting 51.1% not visited PHCs. It is observed that the households under low SLI category visit PHCs more than their counterpart under study. Since, it is mentioned above that none of the sample households fall into High standard of living category; hence it has been kept aside from the analysis.

The *p*-value obtained from the chi-square test is found significant at 1% level of significance. Hence it can be inferred that standard of living might impact the households visit to PHCs. The households with a low standard of living are likely to visit more to PHCs than the households with a medium standard of living.

Table 5.14: Visit to Primary Health Centres (PHCs) by Perceived or Observed Severity (n=436)

Anybody Severe	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
Not Severe	147(39.2)	228(60.8)	375
Severe	47(77.0)	14(23.0)	61
Pearson Chi-Square	30.433	*p*=.000***	

Source: Field Survey '***' -Significant at 1% level

Table 5.14 highlights the visit of PHCs on severity of illness, which is considered one of the need factors for utilisation of healthcare services. It has been observed that 375 households reported no severe illness in the family during the reference period, of which 228 constituting 60.8% visited PHCs while 147 households constituting 39.2% not visited PHCs. On the other hand, 61 households reported severe illness in the family. It is found that 14 households constituting 23.0% having severe illness visited PHCs while 47 households constituting 77.0% not visited PHCs. Thus, it has been found that most households with severe illness not visited PHCs to use healthcare services. Therefore, it implies that the higher the severe illness cases the lower the chances of visiting PHCs.

The *p*-value obtained from the chi-square test is found significant at 1% level of significance. Hence it can be inferred that the severity of illness also may impact the visit of PHCs significantly.

Table 5.15: Visit to Primary Health Centres (PHCs) by Type of Illness (n=436)

Anybody chronic illness	Visited Primary Health Centres (PHCs)		Total
	No	Yes	
No	150(49.0)	156(51.0)	306
Yes	44(33.8)	86(66.2)	130
Pearson Chi-Square	8.506	*p*=.004**	

Source: Field Survey '**' -Significant at 5% level

Table 5.15 has presented the association between the type of illness and the visit to PHCs. Type of illness is another need factor affecting the utilisation of primary healthcare services considered for the study. It includes either Chronic or Not chronic illness of any of the family members. It is observed that 306 out of 436 households reported no chronic illness cases in the family, of which 150 households constituting 49.0% having no chronic illness visited PHCs while 156 households constituting 51.0% not visited PHCs. On the other hand, 130 households reported chronic illness in the family, of which 86 households constituting 66.2% having chronic illness visited PHCs while 44 households constituting 33.8% with chronic illness not visited PHCs. It is observed that the households having chronic illnesses are likely to visit more than their counterpart.

The *p*-value obtained from the chi-square test is found significant at 5% level of significance. Hence, it can be inferred that illness type also may significantly impact the visit to PHCs under the study area.

5.4 Results and Discussion of Binary Logistic Regression Model

In this section, the output tables of the binary logistic regression test results generated in SPSS Version 25 on the utilisation level of Primary Health Centres (PHCs) healthcare services have been discussed elaborately.

`A total of 502 households are surveyed from the study area. Among the 502 households, 436 households reported atleast one illness case are considered for statistical analysis about the nature and level of utilisation of PHCs for primary health care services in the study.

Table 5.16: Case Processing Summary

Unweighted Cases[a]	N	percent
Included in Analysis	436	100.0
Missing Cases	0	0.0
Total	436	100.0

Table 5.16 pertains to case processing summary. It has been observed that 436 cases are included in the model.

Table 5.17: Classification Table

Observed			Predicted		
			Visited PHCs		percentage Correct
			No	Yes	
Step 0	Visited PHCs	No	0	194	0.0
		Yes	0	242	100.0
	Overall percentage				55.5

a. Constant is included in the model.
b. The cut value is .500

In Block 0: Beginning Block, Table 5.17 describes the baseline or null model of the logistic regression on predicted visit to the PHCs. It has been observed that model predicts "Yes" because responses from units of sample are more for visit to PHCs than the not visit to PHCs. The overall percentage of prediction of this model is 55.5% as the null model which does not include our independent or explanatory variables.

Table 5.18: Dependent Variable Encoding

Original Value	Internal Value
No	0
Yes	1

Table 5.18 depicts the dependent variable '0' encoding for No (Not Visit to PHCs) and '1' for Yes (Visit to PHCs) considered in the model.

Table 5.19: Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.221	.096	5.263	1	.022	1.247

Table 5.19 shows the coefficient for the constant (**B**) that highlights the significance level. It has been observed that model with the constant is a

statistically significant predictor of the outcome (p <.050). Thus, it indicates that the baseline model has some predictive power with accuracy of 55.5%.

The subsequent SPSS output of the regression model that includes our explanatory variables begins with the heading of Block 1: Method = Enter

Table 5.20: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	237.725	22	.000
	Block	237.725	22	.000
	Model	237.725	22	.000

The Omnibus Tests of Model Coefficients has been used to check the new model on explanatory variables is an improvement over the baseline or null model. Thus, it indicates the likelihood-ratio chi-square test of the current model versus the null model. Table 5.20 as the Step 1, Omnibus Tests on Model coefficient indicates that the current model outperforms the null model because the model is statistically significant as the *p*-value is .000. Hence, test suggests that the new model is explaining more of the variance in the outcome and is an improvement over the null model. The chi-square is highly significant (chi-square=237.725, df=22, p<.000), so the new model has been significantly better than the null model.

Table 5.21: Classification Table[a]

Observed			Predicted		
			Visited PHCs		percentage Correct
			No	Yes	
Step 1	Visited PHC	No	146	48	75.3
		Yes	24	218	90.1
	Overall percentage				83.5

a. The cut value is .500

Table 5.21 presents the predicted values of the response variable based on the full logistic regression model. It shows that how many cases are correctly predicted and how many cases are not correctly predicted. It has been found that 146 cases are observed to be 0 (not visited) and correctly predicted to 0, while 48 cases are observed to be 0 but are predicted to 1(visited). On the contrary, 218 cases are observed to be 1 and correctly predicted to be 1, while 24 cases are predicted to be 1 but are predicted to be 0. The overall percentage of cases correctly predicted by the null model to the full model has increased from 55.5% to 83.5%.

In logistic regression, Cox & Snell and the Nagelkerke R Square are the most common statistics used to measure the usefulness of model, which are similar to the coefficient of determination (R^2) in linear regression. That is why; these are also called pseudo-R^2. The pseudo-R^2 values tell us approximately how much variation in the outcome has been explained by the model. The maximum value that the Cox & Snell R^2 attains is less than 1, while the Nagelkerke R-square is an adjusted version of the Cox & Snell R Square and covers the full range from 0 to 1. It indicates how useful the explanatory variables are in predicting the response variable and can be referred to as measures of effect size. Here in this study, Nagelkerke R Square has been used preferably.

Table 5.22: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	361.404[a]	.420	.563

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001

The Model Summary presented in Table 5.22 provides the -2LL, Cox & Snell and the Nagelkerke R Square values for the full model. The value of Nagelkerke R Square has been found 0.563, indicating that the model is useful in predicting visit to PHCs. Further, it suggests that the model explains roughly 56%

of the variation in the outcome. The value of 0.56 indicates that the model has been found useful in predicting visit to PHCs.

The Hosmer–Lemeshow test is a commonly used test for assessing the goodness of fit of a model and allows for any number of explanatory variables, which may be continuous or categorical. The test is similar to a $\chi 2$ goodness of fit test. It has the advantage of partitioning the observations into groups of approximately equal size, and there are less likely to be grouped with very low observed and expected frequencies. The observations are grouped into deciles based on the predicted probabilities.

Table 5.23: **Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	8.480	8	.388

The Hosmer-Lemeshow statistic indicates a poor fit if the significance value is less than 0.05. Table 5.23 shows that the model adequately fits the data since Hosmer–Lemeshow test p=.388 greater than the significance value at 0.05.

Table 5.24 shows the binary logistic regression analysis results on the utilisation of healthcare services of Primary Health Centres (PHCs). Table 5.24 has been derived from the Variables in the Equation table of SPSS output which shows the B coefficient Value, *p*-value or significance level and Odds ratio.

Table 5.24: Results of Binary Logistic Regression Analysis

Variables	B	Sig	Odds ratios
Distance (rc: 4 km & Above)		.007	
Distance (0-1 Km)	1.081	.002	2.948**
Distance (2-3 Km)	0.787	.022	2.198**
Opening hour of PHC (rc: Convenient)			
Not Convenient	-4.323	.000	0.013***
Religion (rc: Christian)		.276	
Religion (Bathou)	-0.874	.112	0.417
Religion (Hindu)	-0.735	.220	0.479
Gender of head (rc: Male)			
Female	-1.937	.000	0.144***
Age Group Head (rc: Above 45 years)		.036	
Age Group Head (Below 35 years)	0.623	.112	1.865
Age Group Head (35 – 45 years)	0.766	.014	2.151**
Occupation of Head (rc: Business)		.000	
Government Employee	0.733	.247	2.081
Farmer	1.890	.000	6.621***
Casual Labour	2.166	.000	8.727***
Highest Educational Level of Family (rc: Graduate and above)		.009	
Primary Level	-0.183	.787	0.832
Under-Matriculate	-1.230	.010	0.292**
Matriculate	-1.190	.002	0.304**
Higher Secondary	-0.303	.425	0.738
MPCE (rc: ₹3001 and above)		.011	
Less than or equal to ₹1500.00	1.768	.018	5.861**
In between ₹1501-₹ 3000	1.025	.166	2.786
Family Size (rc:Big- 8 and above)		.504	
Small(1-3)	-0.489	.462	0.613
Medium(4-7)	-0.680	.285	0.507
Standard of Living Index (rc: Medium)			
Low Living Index	0.611	.034	1.843**
Anybody Chronic(rc: Yes)			
No	-1.223	.000	0.294***
Anybody Severe(rc: Yes)			
No	2.261	.000	9.593***
Constant	-2.673	.026	0.069

Source: Field Survey Note: rc= reference category, "***"= significant at 1% level, "**"significant at 5% level

The logistic regression analysis on distance variable has been found significant at 5% level of significance and the coefficient (B) value of all categories has been found positive. The p-value=.002 obtained from Logistic regression for distance 0-1 Km ($p < 0.05$) has been found statistically significant and the Odds Ratio of 2.948 indicates that households from 0-1 km are more likely to visit to PHCs than reference category (4 km and above) by 2.95 times. Similarly, households from 2-3 km are also more likely to visit the PHCs than the reference category that p-value <0.05. The odds ratio is the ratio of odds of the first group and the odds in the second group. The Odds Ratio obtained from the result of Logistic Regression has been found 2.198, implying 2.20 times more likely to visit the PHCs than the households from the reference category (4 km and above) but lesser than the households from the 0-1 km distance. Hence, it can be interpreted that nearer to the health centre, i.e., Primary Health Centres the more likely to visit the PHCs and the farther the distance the lesser the visit to the PHCs. This finding has been found consistent with other studies (Ahmad, 2019; Khound, 2019) [2] [3]. It has been found that Distance is an important determinant of health care service utilisation. It has been observed that the distance between the place of residence and the public health centres increases, the likelihood of use of public health care facilities decreases (Khound, 2019)[4].

In the present study, the opening hour duration of the PHCs has been considered as one of the explanatory variables. An earlier study on utilisation of the services of the primary health centres in India revealed that almost 60% PHCs close after 4 pm for which healthcare services are not available even for emergency services particularly during accidents in the rural areas (Dar, 2015)[5]. Further, it has also been revealed in the other study that inconvenient facility timing affected the public health services such as medical treatment significantly during pregnancy, treatment for children or health check-ups for self or others (Bagchi et al., 2020)[6]. Therefore, the question of opening hours of PHCs arises about convenient or not. It has been found that the *p*-value is significant at 5% level of significance. The ratio of Odds not convenient hour of opening to convenient opening hour is found .013, which is less than 1 and the B coefficient

value is found negative, i.e. -4.323. Thus, odds ratio indicates that the likelihood of utilising primary healthcare service has been found lesser by .013 times (98.7%) for those who feel its timing inconvenient.

It has been observed that belief system, *i.e.,* religion is not a significant factor affecting the utilisation of PHCs in the study area. Both the bivariate and logistic regression analysis p-value has been obtained non-significant. Thus, the non-significant result obtained may be due to the similar socio-economic characteristics of the households under study. It has been found in contrast with the earlier study on utilising health care services of PHCs by the households among India's Empowered Action Group (EAG) states. It has been found that Odds ratio of Hindus is greater than the Christian and others based on Muslim as reference category indicating Hindus are more likely to utilise the PHC service (Kumar & Singh, 2016)[7].

Gender of Household heads is also significantly affecting the utilisation of the PHCs healthcare services. It is to be interpreted that female-headed households are less likely to visit the PHCs than male-headed households. The p-value=.000 indicates significant at 1% level of significance, and Odds ratio of female-headed households is given by 0.144 against the male-headed households considered as reference category. The coefficient of B has been found negative, *i.e*. -1.937, since the odds ratio is less than 1 which reveals the likelihood of visiting the PHCs is less by 0.144 times, *i.e.,* 85.6%.

The bivariate analysis on age group of household heads did not provide any significance as a correlate with the visit of PHCs in the study area. However, data of the regression analysis shows that the higher age group of 35-45 years has been found significant at 5% level of significance. The odds ratio has been found 2.151 compared to the reference age group of 45 years and above, which indicates that the likelihood to visit PHCs is more by 2.151 times than the reference category of age group of household heads. However, the lower the age group below 35 years of the household head has been found non-significant as the *p*-

value=.112, greater than the standard significance level. It can be said that higher age group of households heads is more likely to visit PHCs than the lower age group households heads.

The occupational pattern of household heads also shows that among the different occupations, Farmers and Casual labour are highly significant since *p*-values of both categories are less than .001. It has been observed that majority of household heads deal in agriculture; the likelihood to visit PHCs is more than the other group of occupations such as Business and Government employees. It is found that the Odds ratio of the Farmers has been found 6.628. Similarly, Casual labours group has been found significant i.e., *p*-value=.000 and Odd ratio indicate that 8.727 times more likely to visit PHCs than reference category. However, household heads who are government employees has been found non-significant.

It has been found from estimated results from the logistic regression that the B-coefficient values have been found negative for all categories of educational level. However, households having education level of Under-matriculate and Matriculate have been found significant at 5% level of significance. The odds ratio for Under-matriculate is found .292 but less than 1. Similarly, the odds ratio for educational level for Matriculate has been found .304, which is less than 1. Therefore, it has been observed that an increase in education level of the households decreases the use of healthcare services of PHCs. This finding is consistent with previous study of Assam. It has been revealed that an increase in the education of the respondent decreases the use of public health care facilities (Khound, 2019)[8]. Healthcare-seeking from PHCs is less among households with primary, secondary and higher-level average household education than households with no education (Mustafaa & Shekhar**,** 2021)[9].

Monthly per capita consumption expenditure (MPCE) is another highly significant factor. The likelihood of the households having MPCE of less than or equal to ₹1500.00 for visiting PHC increases by 5.865 times as value of odds ratio=5.865 and *p*=.018 compared to reference group of households having MPCE

of ₹ 3001 and above. However, households whose MPCE ranges between ₹1501-3000 have been found non-significant. Thus, it can be inferred that with the increase in MPCE, the rate of use of PHCs decreases. It has been found consistent with the other studies on the utilisation of public health facility health services. A study has shown that as MPCE increases, the use of public health care facilities decreases (Khound, 2019)[10]. It may be due to the increase in consumption expenditure of the households; the ability to afford healthcare service expenditure also increases and enables to visit the private health care services.

Under this study, the family size has been categorised into small size (1-3 members), medium size (4-7 members) and big size (8 and above members) respectively. It has been found that the size of the family does not influence the utilisation of PHCs services. It indicates that the size of the family is nonsignificant.

Standard of living also exerts a positive effect on chances of women having institutional delivery of the child. It has been found that medium standard of living had higher percentages of institutional delivery than low standard of living (Rajput, 2011)[11]. As mentioned above, standard of living index of sample households under study has been found in the category of low SLI and medium SLI. Accordingly, it has been observed that Standard of living of the households is significant as the *p*-value=.034. The Odds ratio of the living index for Low living is found 1.843, indicating that the households within the low living index category are likely to visit more by 1.843 times i.e., by 84.3% than the households within the medium living index category. Thus, it can be concluded that the higher the standard of living of the households is less likely to visit PHCs and lower the standard of living of households more probability of visiting the PHCs.

Chronic illness was significantly associated with utilisation of PHCs health care services. Chronic patients have a higher probability of visiting any four providers relative to self-treatment than patients with an acute illness (Qian et al., 2009)[12]. The majority (63%) reported to suffer from a chronic condition. Geographical proximity was the most important factor guiding the decision solely

looking at patients using public services (Gabrani et al. 2020)[13]. Thus, the present study is consistent in visiting PHCs more likely by chronic than the non-chronic illness. That means the use of PHCs services has been affected by the type of illness. From logistic regression analysis on Chronic and Not Chronic, the negative B coefficient and the Odds ratio is obtained as .294. Thus, it implies that there has been likely decrease in the use of PHCs services by households not having chronic illness by .294 times less i.e., 70.6% in comparison to the households having chronic illness.

Perceived or observed Severity has also been identified as one of the highly significant explanatory variables for the utilisation of healthcare services of PHCs. The odds ratio for households with not severe has been found 9.593 based on based reference category severity (rc: Yes). Thus, the likelihood of visiting PHCs by households with no severe illness cases is found to be 9.593 times more than the reference category. In other words, if no severe is considered to be either mild or somewhat serious illness cases, then the households having mild or somewhat severe illness are likely to visit 859% more than the households having severe illness. It may be due to severe illness cases requiring advanced and special healthcare services are not available in PHCs. Health status, in general, and morbidity, in particular, is primarily influenced by the behavioural decisions of the individuals or family, besides genetically inherited health endowments and the health environment in which they reside. Thus, illness is not a random event but one that is systematically related to the household- and community-level factors (Duraiswamy, 2001)[14].

Conclusion

The impact of socio-economic factors such as highest educational level of the family, MPCE, occupation of household heads has been found associated with level of visit to the Primary Health Centres for healthcare services in logistic model analysis. Similarly, gender of household heads has been found affecting the

level of utilisation of healthcare services of the Primary Health Centres. While age of the household heads has been found non significant in bivariate and logistic analysis, however, in case of higher age group of above 45 years had found significant in model analysis. However, highest educational level is not found associated with the visit to Primary Health Centres in bivariate analysis which indicates that there is no direct relation between the visit the Primary Health Centres and the educational level of households in the study. Further, distance and the opening hours also have impact on the visit to Primary Health Centres in the study. It has been observed that type of illness and severity have been found significant in both statistical tests i.e., bivariate analysis and logistic regression analysis. Amongst the predictors considered under the study, religion and size of family are not influencing factors in the utilisation of healthcare services of Primary Health Centres.

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