

# Geriatric Health Care Utilization in Selected Rural Area of Assam

Kaberi Saikia<sup>1\*</sup>, Doli Deori<sup>2</sup>

<sup>1</sup>Department of Community Health, Royal School of Nursing under the Assam Royal Global University, Betkuchi, Kamrup (Metro), Assam, India, <sup>2</sup>Department of Psychiatric Nursing, Royal School of Nursing under the Assam Royal Global University, Betkuchi, Kamrup (Metro), Assam, India. \*Corresponding Author's Email: kaberisaikia92@gmail.com

## Abstract

Health care utilization is a critical aspect reflecting the effectiveness and accessibility of services, shaped by factors such as proximity, waiting times, privacy, affordability, and treatment efficacy. To delve into this realm, a community-based cross-sectional survey was undertaken, focusing on the geriatric population. Employing a multi-stage random sampling technique, 350 individuals aged 60 years and above were selected from two Community Development Blocks in Kamrup district, Assam. Data collection involved a structured interview schedule, incorporating socio-demographic profiles through Pareek and Trivedi's socio-economic Rural scale and an additional 25 items to assess health care service utilization among the elderly. The results highlighted a higher percentage of females (61.28%) compared to males (48.63%), with a significant portion being widows, illiterate, and unemployed. Socio-economic class-IV accounted for the majority (62.57%) of the participants. Notably, 65.71% of the elderly moderately utilized health care services, while 24.57% inadequately accessed them. Marital status, family type, occupation, and socio-economic class exhibited varying impacts on health care service utilization. The study underscores the pressing need to enhance the overall well-being of rural elderly individuals. Proposing community-based geriatric health care services, leveraging existing rural health infrastructure, emerges as a viable solution to address the needs of this demographic group.

**Keywords:** BPL families, Elderly, Geriatric population, Literacy, Usage of medical services.

## Introduction

Across the world, countries are experiencing rapid population ageing. The growth rate of elderly population is more rapid in developing countries like India than developed countries (1). In India elderly population accounts for 8.14% of the total population as per census 2011 and likely to increase 34% by the end of this century (2). Health problems and medical care are major concerns among a large majority of the elderly. For a variety of reasons, the majority of older people refuse to seek medical attention.

Rural elderly have apprehensions and apathy about contacting doctors of modern system of medicines and hence they are usually brought to hospitals when the diseases or ailments reach advanced stage (3). Public health care utilization is very low in India. Less than 20 % of the population that seeks out-patient services and less than 45% of whom seek indoor treatment avail services in public hospitals (4). So, health care system of the country needs to be prepared to deal with disease burden of this age group. National program of

Health care for elderly put emphasis on availability of accessible and affordable dedicated health care services (5). To build an effective system, information is required about health care utilization. Utilization informs us about the utility of services (6, 7) and is often determined by proximity, available waiting time, privacy, affordability, and treatment effectiveness (8). It is important to examine how these factors plays roles and shapes the health care service utilization of elderly who are usually considered a vulnerable age group. Therefore, proper understanding of the utilization level and pattern of health care services and the factors influencing the health care utilization of elderly is very essential so that the emerging situation in our country can be properly addressed with strengthening of geriatric health care services. Hence, this study was proposed to be conducted in rural area of Assam, with the following objectives -

a) To determine the utilization of health care services of the elderly population of rural areas,

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(Received 28<sup>th</sup> February 2024; Accepted 26<sup>th</sup> April 2024; Published 30<sup>th</sup> April 2024)

- b) To find out the variables affecting the health care utilization of elderly population residing in rural area.

## Methodology

### Study Design

The study was a community based cross sectional descriptive study using quantitative approach. The study's surveys (quantitative approach) offered useful data on utilization rates. Including interviews (qualitative approach) have provided a better understanding of why certain variables affect healthcare utilization.

The study was approved by Institutional Ethical Committee, the Assam Royal Global University, Guwahati. Reference No. RGU/REG-OFF/No-84/2023/25.

### Study Duration

The duration of the study was from 15<sup>th</sup> September to 30<sup>th</sup> of October 2023.

### Study Population

The study was conducted in the undivided Kamrup district of Assam, which has 17 development blocks. Out of 17 development blocks two blocks namely Dimoria and Kamalpur development blocks were randomly selected. Out of 183 villages in Dimoria block, 18 villages were chosen and similarly 7 villages were randomly selected from 66 villages in Kamalpur Development block. The study focuses on the elderly population aged 60 years and above, encompassing these selected villages. The aim is to gain insights into the health and healthcare utilization patterns of the elderly in these specific areas, contributing valuable information for a more targeted and region-specific understanding of the challenges and needs

of this demographic group in the undivided Kamrup district of Assam.

### Sample Size

The study considered the estimated total population of individuals aged 60 and above in Dimoria and Kamalpur Development Blocks, which was 2307 and 1055, respectively. To ensure a representative sample, it was decided that 10% of this estimated geriatric population would be included in the study. Consequently, the sample size for Dimoria Development Block was determined to be 240, and for Kamalpur Development Block, it was 110. This decision resulted in a total sample size of 350, combining the selected participants from both Dimoria and Kamalpur Development Blocks. The approach of selecting 10% of the estimated geriatric population aims to capture a diverse yet manageable representation of the elderly population in these specific areas, facilitating a meaningful and insightful analysis of health-related patterns and utilization behaviors among individuals aged 60 and above in the study.

### Sampling Technique

A multistage random sampling technique was used in the present study.

### Study tool

The data collection instrument employed was a pre designed and pre validated structured interview schedule featuring two sections. In Section one, the socio-demographic profile of individuals aged 60 years and above was obtained using Pareek and Trivedi's socio-economic Rural scale. Section two of the instrument was dedicated to assessing the usage of medical services among the elderly and encompassed 25 items (Table 1). These items

**Table 1:** Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> <li>Elderly persons who were in the age group of 60 years and above.</li> <li>Elderly persons who reside in the selected villages and present during the time of data collection.</li> <li>One elderly persons from each selected household and willing to participate in the study.</li> </ul>	<ul style="list-style-type: none"> <li>Elderly people whose names were not included in the voter list.</li> <li>Elderly people who were semi-conscious or unconscious.</li> </ul>

covered various aspects, including the availability of health facilities, the distance to reach these facilities, the necessity to consult a physician, types of health facilities used during illness, reasons for preferring specific health facilities for treatment, the frequency of elderly outpatient department (OPD) runs in the nearest hospital, health services provided through elderly clinics, modes of transportation to health care facilities, treatment status, frequency of seeking health care facilities in the past year, reasons for seeking or not seeking health care during illness, purposes for using

### Scoring Procedure

For the assessment of healthcare service utilization, each response to the relevant questions was awarded one mark, while no comment or response resulted in zero marks (Table 2). Utilization was calculated to be 88. Individual

health care facilities, hospitalization details such as the type of ward, reasons for hospitalization, duration of stay in the hospital, the stage of health condition when seeking treatment, pre-hospitalization treatment, post-discharge treatment, hospital charges paid, and total medical expenditure during hospitalization in rupees, along with any loss in household income incurred for treatment. The reliability of the Interview Schedule was calculated by using split half method and it was found to be 0.82, which was considered to be reliable and adequate.

scores ranged from a minimum of 14 to a maximum of 24. To gauge the extent of healthcare service utilization, these scores were segmented into quartiles, specifically the 25th and 75th percentiles. Consequently, the levels of healthcare service utilization were delineated as follows based on score ranges.

**Table 2:** Levels of usage of medical services

Levels of usage of medical services	Score range
Inadequate utilization of healthcare services	<14.7
Moderately adequate utilization of healthcare services	14.7-18
Adequate utilization of health care service	>18

### Procedure for Data Collection

After securing formal approval from the Ethical Committee of Assam Royal Global University, Guwahati, as well as the Sub Divisional Medical Officer (SDMO) of Sonapur and Kamalpur primary health centre (PHC) and Child development project officer (CDPO) of Sonapur and Kamalpur Integrated Child Development Scheme block, permission was obtained for collaboration in the data collection process. Prior to commencing the actual data collection, outreach efforts were made to Accredited Social Health Activist (ASHA) workers, ASHA supervisors, Anganwadi workers, village leaders, and active members of village Mahila Mandals in the respective villages, ensuring their willingness to participate. A cohesive team was established, consisting of key members such as Auxiliary Nurse Midwifery (ANM), ASHA/ASHA supervisor, and Anganwadi worker (AWW). Notably, ASHAs played a crucial role in leading the team to effectively reach out to the elderly population for the data collection procedure. A list of villages with population was obtained from the Block and Circle Offices. By using the voter list of the selected villages, households having the elderly

population (60 years and above) were serially numbered. Then using the random number table, the study household were selected randomly. Fourteen number of randomly selected household from each selected villages were visited to make predetermined sample size of 350 (18+7=25 villages, 25 x 14=350). No difficulties were found during data collection.

### Data Analysis

The data underwent a meticulous coding process and were methodically arranged into a master sheet. Following this, the Statistical Package for the Social Sciences (SPSS) was utilized for quantitative data analysis. The primary objective was to identify the factors exerting the greatest influence on the usage of health services, employing both descriptive and inferential statistical methods. These techniques included frequency tables, percentages, means, standard deviations, and logistic regression analysis. This comprehensive analytical approach enabled a detailed scrutiny of the data, thereby fostering a nuanced comprehension of the factors impacting health care service utilization within the studied population.

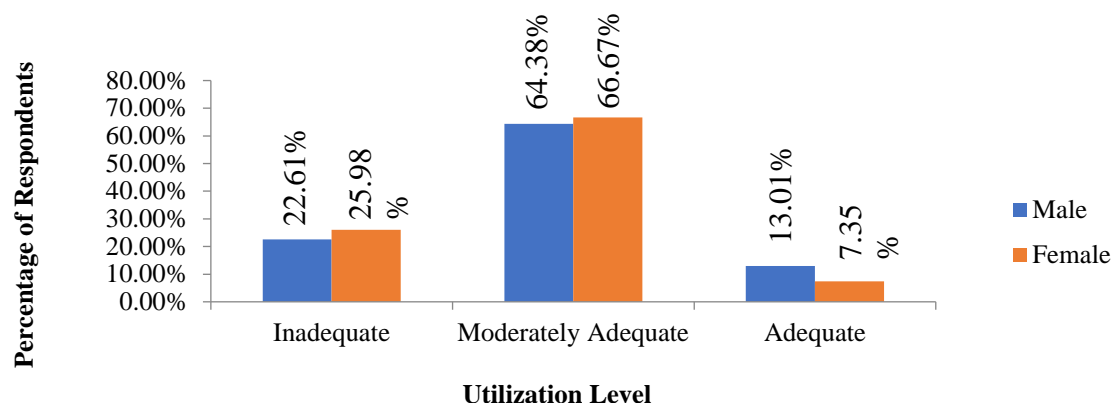
## Results

Examining the socio-demographic characteristics of the sample reveals several noteworthy trends. The majority of participants fall within the 60-69 age group, with a higher percentage of females 61.28% compared to males 48.63% in this range. Marriage is prevalent, with 94.57% married, 5.14% unmarried, and 34.57% widowed. The distribution between joint and nuclear families is almost equal, with nuclear families being more prominent among males 53.42% and females 53.92%. A considerable proportion of participants are literate 61.14%, with a notable illiteracy rate among females 58.83%. About 15.71% of participants are still working, predominantly among males 22.60%. In terms of past occupation, 46% of female participants were housewives, and unemployment accounts for 16.29% of the total, with 16.86% cultivators and 10.85% service holders. Among female participants, 90.69% are unemployed. Sources of income vary, with 37.14% dependent on children and 21.43% on pensions. The majority 32% of participants have a per capita income between Rs. 500 and Rs. 1499/, with only 10.57% exceeding Rs. 10,000. Approximately 32.57% belong to below poverty line category, holding below poverty line (BPL) cards, while 61.71% are non-BPL category participants. Only 20.28% are financially independent, with the

majority 75.58% being dependent, either fully 52.29% or partially 26.29%. Among women participants, 66.67% are fully dependent, and 21.08% are partially dependent. The housing situation indicates that 56.57% of participants have kutcha houses, and 22.86% have brick houses. Social participation is observed in 49.42%, while 45% have no such association. In terms of socio-economic classes, no participants were found in class I, with the highest number 62.57% in class IV. Among males, a considerable proportion 37.67% is in class II, while among females, the next higher category is class V 28.43%. Exploring the application of medical services serves as a crucial indicator of accessibility and affordability, especially for households, particularly those with elderly members. Given the frequent occurrence of illnesses among the aged, there is an urgent requirement for consistent application of health services offered by both private and public sectors. Throughout the survey, efforts were made to collect data on the use of health services by elderly patients who have received medical care in the year preceding the survey. This initiative aims to shed light on the patterns and extent of Usage of health care services with in this demographic, providing insight into the accessibility and affordability of healthcare for the elderly population in both private and public spheres.

**Table 3:** Level of utilization of health care service by the participants **N= 350**

Variables	Inadequate n (%)	Moderate n (%)	Adequate n (%)	Total n (%)
<b>Male (Age in years)</b>				
60 – 69	14(9.59)	51(34.93)	06(4.11)	71(48.63)
70 – 79	12(8.22)	34(23.29)	09(6.16)	55(37.68)
Above 80	07(4.79)	9(6.16)	04(2.73)	20(13.70)
Total	33(22.61)	94(64.38)	19(13.01)	146(100)
<b>Female (Age in years)</b>				
60 – 69	37(18.14)	81(39.71)	07(3.43)	125(61.27)
70 – 79	14(6.86)	48(23.53)	08(3.92)	70(34.31)
Above 80	02(0.98)	7(3.43)	0(0)	09(04.41)
Total	53(25.98)	136(66.67)	15(7.35)	204(100)
60 – 69	51(14.57)	132(37.71)	13(3.71)	196(56)
70 – 79	26(7.4)	82(23.43)	17(4.86)	125(35.71)
Above 80	09(2.57)	16(4.57)	04(1.14)	29(8.29)
Grand total	86(24.57)	230(65.71)	34(9.71)	350(100)



**Figure 1:** Level of utilization of health services by participants

The above Table 3 shows that the majority of the participants 65.71% have moderately utilized the health care services followed by 24.57 % of the participants who have inadequately utilized the health care services. Only 9.71 % of the participants had adequately utilized the health care services. In case of moderately utilizing the services females 66.67% have recorded marginally

higher percentage than their male counterpart 64.38% (Figure 1). Age wise analysis of the utilization level of health care services shows an inverse relationship with moderately utilized health care services but no specific trend could be observed in relation to inadequate usage of medical care services.

**Table- 4:** Utilization Pattern of Health care Services among the participants

Services	Male	%	Female	%	Total	%
<b>Health care facilities</b>						
Available	145	99.32	202	99.02	347	99.14
not available	1	00.68	1	00.49	2	00.57
NA	0	00.00	1	00.49	1	00.29
<b>Type of Health care</b>						
State Govt	137	93.84	179	87.75	316	90.29
Central Govt	0	00.00	0	00.00	0	00.00
Private	3	02.05	5	02.45	8	02.29
1 km	6	04.11	20	09.80	26	07.43
2 km	89	60.96	95	46.57	184	52.57
3.5 km	39	26.72	77	37.75	116	33.14
more than 5	18	12.33	32	15.68	50	14.29
<b>Going to physician</b>						
regular basis	15	10.27	12	05.88	27	07.71
during illness	131	89.73	192	94.12	323	92.29
<b>Treatment place</b>						
PHC	76	52.05	117	57.35	193	55.14
CHC	28	19.18	25	12.25	53	15.14
Dispensary	12	08.22	27	13.23	39	11.14
PHC/CHC	3	02.05	4	01.96	7	02.00
PHC Dispensary	5	03.42	9	04.41	14	04.00

Hospital	1	00.68	1	00.49	2	00.57
NA	21	14.38	21	10.29	42	12.00
Private clinic	21	14.38	33	16.17	54	15.43
Nursing home	8	05.48	2	00.98	10	02.86
Ayurvedic	3	02.05	4	01.96	7	02.00
Homeopathic	7	04.79	7	03.43	14	04.00
Others	0	00.00	0	00.00	0	00.00

#### Reasons for preference

Availability	3	02.05	5	02.45	8	02.29
Accessibility	19	13.01	20	09.80	39	11.14
Affordability	37	25.34	73	35.78	110	31.43
Better facility	57	39.04	50	24.51	107	30.57
1,2	0	00.00	1	00.49	1	00.29
1,3	0	00.00	4	01.96	4	01.14
1,4	0	00.00	2	00.98	2	00.57
2,3	17	11.64	27	13.23	44	12.57
2,4	3	02.05	6	02.94	9	02.57
3,4	11	07.53	13	06.37	24	06.86

#### OPD in nearest hospital

Yes	1	00.68	0	00.00	1	00.29
No	124	84.93	123	60.29	247	70.57
not known	20	13.70	76	37.25	96	27.43
NA	1	00.69	3	01.47	4	01.14
<b>If 1 days per week</b>	NR		NR		NR	

#### Health Services

physical health check	2	01.37	0	00.00	2	00.57
treatment place	8	05.48	10	04.90	18	05.14
health education	0	00.00	0	00.00	0	00.00
all the above	0	00.00	0	00.00	0	00.00
1,2	1	00.69	3	01.45	4	01.14
NR	135	92.47	191	93.67	326	93.14

#### Transportation facility

Walking	35	23.97	52	25.49	87	24.86
Vehicle	73	50.00	117	57.35	190	54.29
ambulance	6	04.11	5	02.45	11	03.14
Others	11	07.53	20	09.80	31	08.86
1,2	13	08.90	7	03.43	20	05.71
1,3	1	00.69	1	00.49	2	00.57
1,4	2	01.37	2	00.98	4	01.14
2,4	3	02.05	0	00.00	3	00.86
1,2,3	2	01.37	0	00.00	2	00.57

#### Services Avail

Under treatment	26	17.81	35	17.16	61	17.43
Not under treatment	120	82.19	169	82.84	289	82.57

One time	37	25.34	56	27.45	93	26.57
2-3 times	49	33.56	66	32.35	115	32.85
More than 3 times	19	13.01	23	11.27	42	12
4	14	9.59	17	8.33	31	8.85
Na	27	18.49	42	20.59	69	19.72
Acute illness	53	36.3	89	43.63	142	40.57
Chronic illness	23	15.75	32	15.69	55	15.71
Both	70	47.95	83	40.68	153	43.71
No facility	1	0.68	2	0.980392	3	0.857
Inconvenient timing	7	4.79	5	2.45098	12	3.429
Too weak to go	2	1.37	2	0.980392	4	1.143
No transportation	1	0.68	0	0	1	0.286
Financial reason	44	30.14	55	26.96078	99	28.29
No faith	3	2.05	3	1.470588	6	1.714
No serious ailment	4	2.74	10	4.901961	14	4
Others	7	4.79	11	5.392157	18	5.143
1,5		0	3	1.470588	3	0.857
1,8	1	0.68	1	0.490196	2	0.571
2,5	5	3.42	4	1.960784	9	2.571
3,5	7	4.79	8	3.921569	15	4.286
3,6	0	0	1	0.490196	1	0.286
4,5	0	0	2	0.980392	2	0.571
5,8	13	8.9	31	15.19608	44	12.57
6,9	2	1.37	0	0	2	0.571
8,5	1	0.68	0	0	1	0.286
Na	48	32.88	66	32.35294	114	32.57
Preventive purposes	22	15.0685	21	10.29412	43	12.29
Curative purposes	124	84.9315	183	89.70588	307	87.71
One time	12	8.21918	11	5.392157	23	6.571
2-3 times	4	2.73973	3	1.470588	7	2.00
More than 3 times	4	2.73973	0	00.00	4	1.143
4	126	86.3014	190	93.13725	316	90.29
Free	12	8.21918	8	3.921569	20	5.714
Paying general	5	3.42466	4	1.960784	9	2.571
Paying special	1	0.68493			1	0.286
NA	128	87.6712	192	94.11765	320	91.43

The above Table 4 shows that majority of the participants 99.14% reported medical services available in their area and 90.29 % participants reported state Govt health facilities are available. More than half of the participants 52.57% used 2Km distance of health facility, 33.14% participants used 3-5 Km distance of

health facility and only negligible proportion of participants 14.29% used more than 5 Km distance of health facilities. 92.29% of participants reported that they were going to physician during illness; only 07.71% of participants were found going to physician on regular basis. Here, female participants are prominently found going to

physicians during illness than males. As against 94.12 % females in this category percentage of male is 89.73. More than half of the participants 55.14% used PHC for their treatment, 15.43% used private clinics, 2.86% used nursing home, and a negligible number of participants 2.0% and 4.0% used Ayurvedic and Homeopathic treatment respectively.

The table also reveals that 31.43% participants used health facilities due to affordability, and 30.57% participants used health facilities due to better facility and 12.57% used the health facilities due to accessibility and affordability both. 70.57% of participants reported that they do not have OPD for elderly persons in their nearest hospitals where proportion of male participants 84.93% is more than that of the females 60.29%. On the other hand, 27.43% of the participants do not know whether there is any such OPD in their nearest hospitals. Regarding the knowledge about health services provided through any geriatric clinic, most of the participants 93.14% were not responding. More than half of the participants 54.29% used vehicles as mode of transportation to

the health care facilities while 24.86% of participants walked to the health care facilities. During the survey, 82.57% of participants said they were not receiving treatment, while only 17.43% said they were. Just 12% of participants sought medical attention more than three times in the last year, compared to 32.85% who visited a hospital two to three times, 26.57% who sought care just once, and the remaining participants who sought care more than once in the past year. 40.57% of the participants were looking for healthcare facilities to treat acute illnesses, 15.71% were looking for facilities to treat chronic illnesses, and 43.71% were looking for both types of illnesses. 28.29% of participants were not seeking health care during illness due to financial reason while 4% of participants did not consider the ailment as serious one. 12.57% of participants reported for both as reasons for not seeking health care services.

In order to examine social factors affecting the Respondent's use of medical facilities, the following details are calculated.

**Table - 5:** Utilization of health services and other social variables

Gender	Inadequate		Moderately adequate		Adequate		Total	
	Nos	%	Nos	%	Nos.	%	Nos	%
Male (n=146)	33	22.61	94	64.38	19	13.01	146	100
Female ( n=204)	53	25.98	136	66.67	15	07.35	204	100
<b>Age group</b>								
60-69 (n=196)	51	26.02	132	67.35	13	06.63	196	100
70-79(n=125)	26	20.80	82	65.60	17	13.60	125	100
80+ ( n=29)	09	31.04	16	55.17	04	13.79	29	100
<b>Marital status</b>								
Married	54	30.51	107	60.45	16	09.04	177	100
Unmarried	02	11.11	09	50.00	07	38.89	18	100
Widow	29	23.97	87	71.90	05	04.13	121	100
Widower	01	02.94	27	79.41	06	17.65	34	100
<b>Family type</b>								
Single	41	25.30	109	67.28	12	07.42	162	100
Joint	45	23.94	121	64.36	22	11.70	188	100
<b>Literacy level</b>								
Illiterate	40	28.57	95	67.86	5	03.57	140	100
Can read only	1	33.33	0		2	66.67	3	100
Can read and write	4	09.76	30	73.17	7	17.07	41	100



Primary school	19	21.11	58	64.44	13	14.45	90	100
Middle school	9	25.00	24	66.67	3	08.33	36	100
High school	10	34.48	18	62.07	1	03.45	29	100
Graduate	3	27.27	5	45.45	3	27.27	11	100
<b>Occupational status</b>								
Having occupation	6	10.91	30	54.54	19	34.55	55	100
No occupation	80	27.12	200	67.80	15	05.08	295	100
<b>Sources of income</b>								
Nil	9	37.50	14	58.33	01	04.17	24	100
Pension	25	33.33	47	62.67	3	04.00	75	100
Savings	1	25.00	3	75.00	0	00.00	4	100
Rent	2	09.09	14	63.64	6	27.27	22	100
Allowances	0	00.00	2	66.67	1	33.33	3	100
Dependent on children	35	26.92	82	63.08	13	10.00	130	100
Any other	14	15.22	68	73.91	10	10.87	92	100
<b>Dependency status</b>								
Dependent	46	25.14	120	65.57	17	09.29	183	100
Partially dependent	12	13.04	70	79.09	10	10.87	92	100
Independent	28	39.44	40	56.34	3	04.22	71	100
<b>Socio-economic class</b>								
Class I	0	00.00	0	00.00	0	00.00	0	00.00
Class II	0	00.00	1	25.00	3	75.00	4	100
Class III	17	26.15	38	58.46	10	15.39	65	100
Class IV	55	25.11	145	66.21	19	08.68	219	100
Class V	14	22.58	46	74.19	2	03.23	62	100

Table 5 shows that gender difference in using health facilities is prominent. The data concentrates mainly in the category moderately adequate use of health facilities. More women 66.67% than men 64.38% were found moderately using the health facilities. Those who adequately use were mainly male participants and their proportion is also not satisfactory which only 13.01% is. The percentage of women using adequately the health care facilities was only 7.35%. This is indicative of the fact that gender has a great influence in using the health facilities.

In the foregoing paragraphs relationship between age and availing of health care services has already been discussed. In the succeeding paragraphs we will discuss how the other social variables contribute to the usage of medical services by the aged.

Family types do not appear to have any relationship with the utilization of health care services. 11.70% of the participants living in joint families found to be utilizing health services adequately as against 7.42% of participants from nuclear families. On the other hand those who utilize health services inadequately 25.30% of them belong to nuclear families and 23.94% of them from joint families. Thus there appears to be no direct relationship between the family structure and utilization of health facilities.

Literacy levels also show no direct relationship with the use of health services by the participants. Although as much as 66.67% of the category of 'can read only' has been using the health facilities adequately, the size of the category is so small that the findings cannot be generalized. Similar is the case with graduates. Majority of the participants have been using the health services moderately

adequately and not much of difference can be observed between various categories. As such it can be concluded that no direct relationship could be established between educational level and usage of medical services.

In terms of occupational category also direct association could be established with that of the utilization of health care facilities. Those having occupation 34.55% of them found to have utilized the services adequately as against 05.08% of the participants having no occupation. Moreover, among the inadequately users, participants having no occupation was more 27.12% compared to participants having occupation 10.91%. From this trend it can be inferred that occupation of the participants is directly associated with the utilization of health care facilities.

In case of sources of income, those participants who are realizing incomes from rents and allowances, a good proportion of them 27.27% and 33.33% respectively appear to be utilizing health

care services adequately. In case of all other categories, the proportion is negligible. There are also no significant differences between the categories in respect of using the health care services moderately. Thus, income sources associated with the variable usage of medical services only relatively.

The dependency status also does not show any trend from which it could be inferred that it has any association with the utilization of health care status. The majority of participants who are making adequate use of health care services fall into the group of partially dependent people. The independent categories utilizing adequately it is the least among all the categories.

From the table it may be observed that Socio-economic class has a direct association with that of the usage of medical services. The more we go up the level of socio economic classes, the more is the proportion of participants utilizing health care services adequately.

**Table- 6:** Logistic Regression Analysis of Usage of health care services

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step	Age	-.319	.203	2.469	1	.116	.727	.488	1.082
1 <sup>a</sup>	Sex	-.750	.347	4.657	1	.031	.473	.239	.934
	Marital	.425	.139	9.311	1	.002	1.529	1.164	2.009
	Family type	.267	.243	1.214	1	.271	1.307	.812	2.103
	Occupation	.295	.229	1.648	1	.199	1.343	.856	2.105
	Dependency	-.215	.173	1.536	1	.215	.807	.575	1.133
	Income	-.002	.104	.000	1	.982	.998	.813	1.224
	Housing	-.233	.181	1.662	1	.197	.792	.555	1.129
	Socio	.173	.246	.494	1	.482	1.189	.734	1.925
	Economic class								
	Constant	1.31	1.58	.685	1	.40	3.72		
		5	9			8	6		

<sup>a</sup>Variable(s) entered on step 1: age, sex, marital, family type, occupation, dependency, income, housing, socio econ class.

In the Table 6 presented the outcome of the logistic regression analysis in respect of utilisation of health care status by the participants. It may be observed that the association of the level of usage of medical services of the participants with that of the predictive variables e.g age, sex, marital status, residence, education, occupation, source of monetary support, etc. with varying degree of effects. Sex {Odd ration (OR) = 0.473, 95%, Confidence interval (CI) = 0.2- 0.9}, age (OR= 0.727, 95%, CI= 0.4- 1.0) and housing (OR= 0.792, 95%, CI= 0.5- 1.1) has a weak effect on the usage of medical services. Factors like marital status is 1.5

times more likely to have effect on usage of medical services (OR= 1.529, 95%, CI= 1.1- 2.0). Those who are married tend to utilize health care services adequately than others. Like that family type, occupations, socio-economic class also in the same way have varying impact on the usage of medical services.

Just 12.29% of participants used health care facilities for preventive measures, compared to the majority of participants 87.71% who used them for therapeutic purposes. Merely 9.71 percent of the participants stated that they had visited a hospital in the previous year. Of these, 2.57% were

admitted to pay wards while 5.71% were admitted to free wards. About 4% of the elderly stayed in the hospital for a week or longer.

To improve geriatric health services, policymakers and healthcare professionals should focus on increasing accessibility through better transportation and infrastructure. Targeted outreach programs addressing women's health needs and educating them about available services are crucial. Exploring options for subsidized or free healthcare for the underprivileged elderly is essential. Promoting preventive care through targeted campaigns and training healthcare professionals to address the specific needs of the elderly population are necessary steps. Further research is needed to understand the reasons behind underutilization and identify the specific healthcare needs of this vulnerable population in Assam.

## Discussion

For Utilization of health care services by majority of the participants 65.71% are moderately utilizing health care services; while 24.57% of the participants are inadequately utilizing the health care services and only 09.71% of the participants are adequately utilizing the health care services. In case of moderately utilizing the services Females 66.67% recorded marginally higher percentage than their male counterpart 64.38%. Age-wise analysis of the utilization level of health care services show an inverse relationship with moderately utilized health care services but no specific trend could be observed in relation to inadequate usage of medical services. Similar findings were reported by Nie JX et al. (2008) that in Taiwan, utilization of health services was 50%, in Spain it was 74.5% and in Canada it was 76% (9). Mean utilization of services was significantly higher among women than men for every age group which is consistent with the present study. In the present study majority of the participants 99.14% reported that health care services available in their area; 90.29% participants reported state Govt. health facilities are available and more than half of the participants 55.14% used PHC for their treatment. 52.57 % of the participants used health facilities which are at a distance of 2 km. Similar findings was reported by Rajan SI in 2006 that 42% of elderly had gone to government hospitals and 39 % to private hospitals (10). But in contrast with the present

study Hedge in 2009 found that 53.9% approached a private allopathic clinic for consultation while only 12.35% of the elderly approached a government primary health centre (11). Similar findings have also been mentioned in studies conducted in 2002 by Sundar and Sharma that in a study in sample slums/colonies in Chennai, 70% have reported government hospital or a municipal dispensary located within a distance of 2 Km. In Delhi 90% of the slum cluster/ colonies have reported the availability of a municipal dispensary within 2 Km (12).

In a study done by Baruah K et al (2017) it was found that 92.29% participants reported that they consult physician during their illness. Proportion of female participants 94.12% is comparatively higher in consulting physicians than males 89.73%. A study from urban slums of Assam reported 83.7% elderly sought health advice and treatment outside home (13).

In the affordability test for the use of health care facilities 31.43% participants reported that they used health facilities due to affordability and 30.57% participants used health facilities due to better facility and 12.57% used due to accessibility and affordability both. Similar findings was reported by Hedge in 2009 and Enamul Haque in Bangladesh which showed 91.7% and 87.6% elderly seek health care during illness (11). A high proportion of elderly seeking health care during illness is relatively a positive trend and common reason for that might be the elderly wanted to be free of diseases indicating that they consider health to be an important issue.

In 2009 Hedge in his study reported that the common reason cited for seeking health was that the doctor is very 'good' followed by the lower out of pocket expenses for consultation. Almost one fifth of the population chose health care because it was close to their houses (11).

In the present study 70.57 % participants reported that they do not have geriatric OPD facility in the nearest hospital where male participants 84.93% are more than the females 60.29%. While 27.43 % of the participants do not have any information about it. More than half of the participants 54.29% used vehicles as mode of transportation to the health care facilities, while 24.86% of participants walked to the hospitals.

In the present study majority of the participants 82.57% reported that they were not currently

under treatment; only 17.43% were under treatment during the time of survey. 32.85% of participants were seeking health care facilities 2-3 times, followed by 26.57% only one time and only 12% participants 3 times during last one year. 40.57% of the participants were seeking health care facilities for acute illness, 15.71% for chronic illness and 43.71% of participants are seeking health care facility for both. 28.29% of participants were not seeking health care during illness due to financial reason while 4.00% of participants had not considered their ailments as serious one and 12.57% reported both as reasons for not availing health facilities. This finding are similar to that of the study conducted among rural elderly in Bangalore by Hedge in 2009 (11). His study shows the 85.65% elderly had sought health care for acute illness and 14.14% for chronic illness. He also reported that 47.47% of the participants were not seeking health care during illness as they considered the ailments as minor, 35.35% reported health care facility is too expensive and 20.2% reported nobody accompanies them to the health care facility.

In the present study majority of the participants 87.71% used health care facilities for curative purposes and only 1.29% of participants used for preventive purpose. Only 9.71 % of participants reported that they were hospitalized during last one year. Of these, 2.57% were admitted to the paid ward and 5.71% to the free ward. In terms of how long patients stayed, approximately 4% of them did so for a week. Rajan in 2006 claimed that 42% of participants had visited government hospitals and 39% had visited private hospitals (10), which is in contradiction to the results of the current study. Over the course of the previous year, over 45% of the elderly patients who used government hospitals were admitted to free wards, 40% to pay wards, and 15% to special wards. About half of the patients stayed in as in-patients for a week or longer. Nonetheless, 67% of them continued their treatment after being released from the hospital, and 52% of them had received treatment prior to being admitted. The current study's hospitalization rate is lower than Rajan's study's, which could be because older residents in rural areas are less likely to be admitted to hospitals unless their condition is really acute and unmanageable.

The current investigation examined the level of utilization of health care services alongside various predictive variables including age, sex, marital status, residence, education, occupation, source of income, and socio-economic status through logistic regression analysis. The study revealed that sex, age, and housing exhibit a weak influence on the utilization of health care services. These findings align with a study conducted in Myanmar by Soe Moe et al. (14). Marital status was found to be 1.5 times more likely to affect the utilization of health care services, indicating that married individuals tend to utilize health services more effectively than others. Similarly, factors such as family type, occupation, and socio-economic class also demonstrated varying impacts on health care service usage.

The outcomes of this study are consistent with those observed by Mushtaq et al. in Pakistan, indicating that area of residence, income, education, and marital status remained significant independent predictors (15). Specifically, the study highlighted that the poor rural elderly were more likely to utilize public hospitals (OR=2.29, 95% CI=1.56-3.37; P<0.001), suggesting that socio-demographic factors significantly influence the usage of medical services among rural elderly populations.

## Conclusion

The study focused on healthcare use by elderly, it identified key issues. Female illiteracy among unemployed elderly, high family dependence, and low socio-economic status were prevalent. Most used healthcare moderately, but a concerning number used it inadequately. Despite government facilities being nearby, lack of specialized care for the elderly and limited travel options were reported.

The study suggests a variety of approaches to rural Assam geriatric care. Transportation and subsidies are needed to improve accessibility. Effective women's health outreach and preventive care efforts are essential. Policymakers may learn more from focus groups and interview data. Finally, a holistic healthcare system must incorporate local requirements and preferences and train healthcare personnel in geriatric care.

The challenge of healthy aging has become increasingly prominent for health systems and policymakers in India. Early usage of healthcare services holds the potential to mitigate morbidity

and mortality rates among the elderly. Urgent attention is required to enhance the overall well-being of rural elderly populations. The provision of community-based geriatric healthcare services, utilizing existing health infrastructure in rural areas, is a viable solution. However, the sustainability of such initiatives relies on well-motivated and adequately trained health manpower capable of identifying age-related health issues. The active support and involvement of family members, community leaders, and Non-Governmental Organizations are crucial for success. Moreover, there is a pressing need for comprehensive training and orientation programs targeting medical and paramedical staff. These programs aim to equip healthcare professionals with the knowledge and skills necessary to understand and address the unique challenges and health concerns specific to the geriatric population.

### Abbreviation

OPD – Out patient department

PHC – Primary health centre

ASHA – Accredited social health activist

ANM – Auxiliary Nurse Midwife

AWW- Anganwadi worker

BPL- Below poverty line

OR – Odd ratio

CI- Confidence interval

### Acknowledgment

We thank the higher authorities of the Assam Royal Global University for their support and encouragement.

### Author Contributions

In terms of writing, evaluating, implementing, conceptualization, and analysis, each and every author participated to the complete document submission.

### Conflict of Interest

Nil

### Ethics Approval

The Study was conducted after the approval of the Institutional Ethical Committee, the Assam Royal Global University, Guwahati. Reference No. RGU/REG-OFF/No-84/2023/25 dtd.11-09-2023.

### Funding

Nil

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