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ENABLERS AND BARRIERS TO THE UTILIZATION OF DENTAL SERVICES AMONG PATIENTS AT HAWA MEMORIAL SAVIOUR HOSPITAL, EAST AKIM MUNICIPALITY-EASTERN REGION-GHANA

BY

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DECLARATION

I, Samuel Adusei, confirm that this dissertation presented towards the award of Masters in Public Health degree is my original work and has not been presented for any examination in any other institution. Where references have been used, these have been cited accordingly.

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DEDICATION

This dissertation is dedicated to the Adusei and Baafi family

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ABSTRACT

Background: The importance of oral health in relation to general well-being of an individual cannot be over emphasized. One of the significantly greatest public health problems of recent times is oral health diseases with its attendant increasing prevalence globally, and in Sub Saharan Africa.

Objective: The objective of this study was to assess barriers and enablers to dental service utilization at Hawa Memorial Saviour Hospital, Osiem, East Akim Municipality; Eastern Region-Ghana.

Methods: The study was an analytical cross-sectional study conducted at the Hawa Memorial Saviour Hospital over a 23 day period between August and September, 2018. Systematic random sampling was used to select 113 study participants and a structured questionnaire was used to collect data from these study participants. Study participants were non critically ill patients aged 18 years and above accessing dental services in the facility.

Data was analyzed using STATA 15.0. Mean age and mean income were computed with their respective standard deviations. Proportion of adequate utilization was computed with a 95% confidence interval. Simple logistic regression was performed to determine factors associated with utilization of dental services. Crude and adjusted Odds ratios were reported with 95% confidence intervals and statistical significance test set at $p< 0.05$.

Results: The mean age of respondents was 50.9 years ± 18.3 SD. Females were in the majority 68.1% (77/113). Most of the respondents were married making up 41.6% (47/113). Sixty two percent of the respondents were employed (71/113). Christians were the majority 92.0% (104/113). The mean income was GH¢765.0 ± 422.4SD. Twenty seven percent (31/113) of respondents adequately utilized dental services with a minimum of 2 visits per year. Majority of respondents utilized dental services due to chronic dental conditions 71.7% (81/113). About 78.8% (89/113) of

respondents cited cost as a reason for inadequately utilizing dental services. Prior knowledge on existence of dental facility (aOR=9.94, 95% CI 2.11 – 46.64, p< 0.01) and amount paid out-of-pocket for dental services (aOR= 0.97, 95% CI 0.95 – 0.98, p< 0.0001) were significant predictors of dental services utilization.

Conclusions: The study found that, proportion of dental service utilization at Hawa Memorial Saviour Hospital was low. It also found out that cost was a major barrier to dental service utilization and awareness of the existence of the facility was an enabler for adequate utilization.

Recommendations: There is a need for awareness creation by management and staff to the general public on the existence of dental services at the Hawa Hospital.

The management of Hawa Memorial Saviour Hospital should take steps on having a policy that considers holistic dental care as part of primary health care covered by the National Health Insurance or other private insurance to reduce out of pocket financing of dental services by their clients.

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LIST OF ABBREVIATIONS

CHAG	Christian Health Association of Ghana
CHPS	Community-Based Health Planning and Services
DHIMS	District Health Information and Management System
DMFT	Decayed, Missing and Filled Teeth
FDI	Federation Dentaire International
GHS	Ghana Health Service
HIV	Human Immunodeficiency Virus
HMSH	Hawa Memorial Saviour Hospital
OPD	Outpatient Department
RHMT	Regional Health Management Team
WHO	World Health Organization

DEFINITION OF SIGNIFICANT TERMS

Operational definitions of key terms used have been explained below.

Accessibility	Capability of being reached, being within reach or being available when needed.
Dentistry	A branch of medicine that consists of the study, diagnosis, prevention and treatment of diseases, disorders and conditions of the oral cavity, commonly in the dentition but also the oral mucosa.
Periodontal disease	An inflammatory disease that affects the soft and hard structures that support the teeth.
Oropharyngeal	Region in the oral cavity and back of the throat.
Pathology	Significant component of the causal study of disease and a major field in modern medicine and diagnosis.
Apical abscess	Localized collection of pus associated with a tooth.
Misconception	Deceptive thought or understanding deviating from standard norm and practices.
Ludwig's angina	A serious potentially life-threatening cellulitis or connective tissue infection of the floor of the mouth, usually occurring in adults with concomitant dental infections and if left untreated may obstruct the airways, necessitating tracheostomy.

Education	The process of acquiring knowledge, skills, values and beliefs resulting in facilitation of learning .In this case, it is the effective use of the dental care services.
Quality	Measure of degree of standard and excellence attributed to a service rendered or received.
Socio-demographic factors	Age, ethnicity, sex, marital status, family size, etc.
Utilization	To put to use, especially to make profitable or effective use of something.

CHAPTER ONE

1.0 Introduction

1.1 Background to the study

The importance of oral health in relation to general well-being of an individual cannot be over emphasized. The prevalence of the disease is on the increase in both low and high income countries (Murray et al, 2014, Colakoglu et al, 2015). Oral diseases affect about 60 -90% of schoolchildren and nearly 100% of adults (WHO 2012).

The increasing use of sugars and insufficient exposures to fluorides has significantly resulted to the ever-rising prevalence of dental caries in many developing nations, which previously recorded low prevalence and incidence rates (Kassebaum et al., 2015). The prevalence of dental disease is still surging despite interventions taken to reduce the incidence in developing countries. For example, North African countries like Egypt and Tunisia have prevalence rates of about 70% (Hamila, 2013) and 43% respectively (Maatouk et al., 2006).

There are few studies on the overall burden of oral health disease in Africa but the World Health Organization (WHO) attributes the greatest burden due to oral diseases to Eastern, Central and sub-Saharan Africa (Marcenes et al., 2013). This is evident in studies conducted in Kenya and Nigeria which reported about 49% and 60% prevalence of dental disease respectively (Bashiru et al., 2014). Dental disease prevalence of 50% - 68% was also reported among Ghanaian residents (GDA, 2017). Korle Bu Teaching Hospital in Ghana recorded an increase of 75% in dental infections from 2010 to 2011.

The effect of dental diseases on an individual is worth noting (World Oral Health Report 2012). Early recognition and treatment and intensifying utilization of dental services will help limit morbidities and mortalities associated with delayed presentation of dental ailments (Lee et al, 2015). Cognitive restructuring on prioritization of health and dental health awareness amongst other factors have been postulated to be solutions to the menace. The ideal however, is routine dental visit where early recognition of these conditions are made and then managed accordingly to prevent complications (Kanyi, 2010)

Routine dental consultation is estimated to be every 6 months for children, teenagers and the elderly or each year for healthy adults (World Oral Health Report 2012). According to Bagramian et al (2009), regular visits to the dentist have an inverse relationship with the presence of dental ailments (e.g.: caries, teeth restoration, dental extraction needs or gum pathology). Therefore, the more dental service visit or dental service utilization, the lesser the prevalence of dental ailments.

Despite the increase in oral diseases in developing countries, dental service utilization remains low (Kikwilu et al, 2008; Nasir et al, 2009). This has accounted for the late presentation of dental cases with its associated complications (Bahadori et al, 2013).

Utilization of health services in dentistry refers to the number of individuals who visit a dental facility for service (Nasir et al 2009). The most common measure of utilization is the number of dental visits per person per year. According to Ajayi and Arigbede (2012), there are many factors reported to directly and indirectly influence a person's utilization of oral health services. These include ill health related factors, service related factors, socio-demographic factors and attitudinal factors. Al-Hussyeen (2010), also indicated some factors thought to encourage dental service utilization such as quality of dental care, convenient appointments, modern and up-to-date dental

clinic, good client-dentist relationship, etc. These factors are considered enablers to service utilization

Studies conducted in industrialized and middle-income developing countries show that low socio-economic status groups have lower utilization rates of oral health service (Nagarjuna et al 2016). These individuals have many financial, material and social disadvantages, all of which may adversely affect oral health (Watt, 2012). Furthermore, according to Petersen and Kwan (2011), low socio-economic individuals often have fewer resources available to secure nutritious foods, adequate health care and other elements necessary for maintaining a satisfactory level of health and quality of life. Under these circumstances, prevention of oral diseases and oral health maintenance often become a lower priority.

These hindrances to service utilization are considered barriers. Some of the setbacks to dental service utilization according to a research conducted by Slack-Smith et al (2010) were fear, cost lack of awareness and poor doctor-patient relationship. Conversely, Bommireddy (2016) reported health care provider factors, which were considered enablers (facilitators) to service utilization. They included friendliness of staff, patient centered appointments, good communication skills and welcoming health team. Affordable cost effective dental services, shorter distance travelled to access services and well-equipped dental facilities were reported as factors that also encouraged service utilization (Nagarjuna et al, 2016).

With increasing prevalence of dental diseases in developing countries and poor dental service utilization, the study seeks to assess the barriers and enablers to utilization of dental service at Hawa Memorial Saviour hospital at Osiem; a rural area in the East Akim Municipality, Eastern Region of Ghana.

1.2 Statement of the Problem

According to WHO (2012), about 60-90% of school-aged children and nearly 100% of adults in both developed and developing countries are affected by oral illness. Again, developing countries are now becoming more affected because of increasing consumption of sugars and exposure to fluorides (Kassebaum et al, 2015).

Some of the commonly experienced dental conditions in the sub-region include dental caries, dental abscess, periodontal disease and gingivitis (Siddiqui et al., 2013). The neglect of oral health has resulted in increased indisposition, cerebral complications and impairments which often lead to treatment procedures that are complex, tasking and associated with considerable financial, logistic and requirements with additional health risks.

Some of the complications associated with delayed presentation of dental diseases include; periodontitis, apical abscess, Ludwig's angina, aspiration pneumonitis, endocarditis, meningitis, and death among others (Nyvad, 2008). These can be averted by timely, preventive and curative dental care.

According to WHO report (2012), routine dental visit is expected to be at least every six months (i.e. twice in a year or more). This is considered adequate utilization. Despite availability of dental services in Ghana, the majority of the population underutilize the service (less than 0.3% of OPD cases) contributing to the gradual increasing prevalence of dental diseases (DHIMS 2 dental service utilization data set accessed 26th October 2017). Analyses of the District Health Information Management System 2 data also showed a decline in persons with dental ailments who visited various facilities in the country from about 100,000 in 2012 to about 73,000 in 2016,

justifying underutilization of dental services available (DHIMS 2 dental service utilization data set accessed 26th October 2017).

Some enablers and barriers to utilization identified in literature include, among others, **cost, fear and anxiety from dental procedures, complications from previous procedures, lack of knowledge on available dental facilities and services and ignorance** (Darwish et al, 2015; Kikwilu et al, 2008).

In the East Akim Municipality of Ghana where this study was carried out, despite the availability of numerous dental clinics, utilization of dental service in the district is low (DHIMS 2 dental service utilization data set accessed 26th October 2017). Example, Hawa Memorial Saviour Hospital (HMSH), recorded dental caries as the highest dental condition in 2016 and according to the facility's annual report, only 32 clients visited the dental clinic in the first half of 2016 and 49 clients in the first half of 2017 (Half year report 2017,HMSH ,accessed 11th June 2018).

In addition, from the annual reports of Hawa Memorial Saviour Hospital, 2015 to 2017, 94 dental attendances were recorded for the year 2015 and only 21.3% met the WHO criteria of adequate utilization (thus 2 or more visits). This reduced to 12.9% (out of 132 total dental OPD attendance) in 2016 and 9.5% in 2017 (Annual report, 2017)

It therefore appears utilization of dental services in the facility is low despite the service availability. Why is this so? What are some of the barriers that limit utilization of dental services and what are some of the factors that enhance utilization of dental services in this facility? These are the issues that this study seeks to address.

1.3 Justification

Hawa Memorial Saviour hospital, a prototype situated at Osiem, a rural area in the East Akim Municipality, has been experiencing fall in OPD attendance for dental care, with relatively fewer patients as against previous attendances. Attendances were 53 at January 2017, dropped to 31 in February, rose to 58 in March and then fell to 35 in April (Annual report, 2017). This periodic rise and fall in OPD attendance is a cause of concern

There is thus the need to assess factors influencing dental service utilization in the facility. What may be considered a barrier in one facility, may be an enabler in another facility. Due to these contextual variations in the factors that influence utilization, it has become necessary to conduct this research to determine the barriers and enablers to use of dental services at this facility. This findings from the study will inform facility managers and other relevant stakeholders in their decision making to improve on dental service delivery.

1.4 Objectives of the Study

1.4.1 General Objective

To assess barriers and enablers to utilization of dental services at Hawa Memorial Saviour Hospital, Osiem, East Akim Municipality-Eastern Region of Ghana.

1.4.2 Specific objectives

The following specific objectives will be pursued:

1. To determine the proportion of patients who adequately utilize dental services at Hawa Memorial Saviour Hospital.

2. To assess predisposing (socio-demographic) factors associated with utilization of dental services.
3. To assess barriers to utilization of dental services at Hawa Memorial Saviour Hospital.
4. To assess enablers to utilization of dental services at Hawa Memorial Saviour Hospital.

1.5 Research Questions

The following questions will help find answers to respond to the objectives of the study:

1. What is the proportion of patients who adequately access dental services at Hawa Memorial Saviour Hospital (HMSH)?
2. What are the predisposing (socio-demographic) factors associated with utilization of dental services at Hawa Memorial Saviour Hospital?
3. What are the barriers to the use of dental services at Hawa Memorial Saviour Hospital?
4. What are the enablers to the use of dental services at Hawa Memorial Saviour Hospital?

1.6 Conceptual framework

1.6.1 Summary of framework

The behavioral model of health service utilization proposed by Anderson and Newman (Babitsch et al, 2012) has been adopted for this study. It classifies predictors of service utilization into three determinants.

Predisposing factors: they increase the chance of using services (age, gender, education, occupation, marital status, income level, religion).

Enabling factors: that may facilitate or prevent service use (income, place of residence, cost of service, and quality of service). From his model, the enabling factors could be facilitators and/or barriers to service utilization.

Need factors: they represent the immediate cause of health service use (self-perceived health status, chronic or acute illness)

In this study, the enabling factors included the following; affordability (whether services rendered is affordable), accessibility (measure of the distance covered to access dental care), availability, staff attitude, perception of quality of care, environment (whether the environment is attractive, noisy and conducive for care), and post op complication (whether client has suffered any post op complication such as bleeding, swelling or unbearable pain in the facility, that could prevent subsequent visits).

The need factors include factors such as, whether client had enough knowledge of dental services, cultural beliefs or misconceptions that may hinder one's willingness to access services,. All these influence clients' perceived need to seek health care.

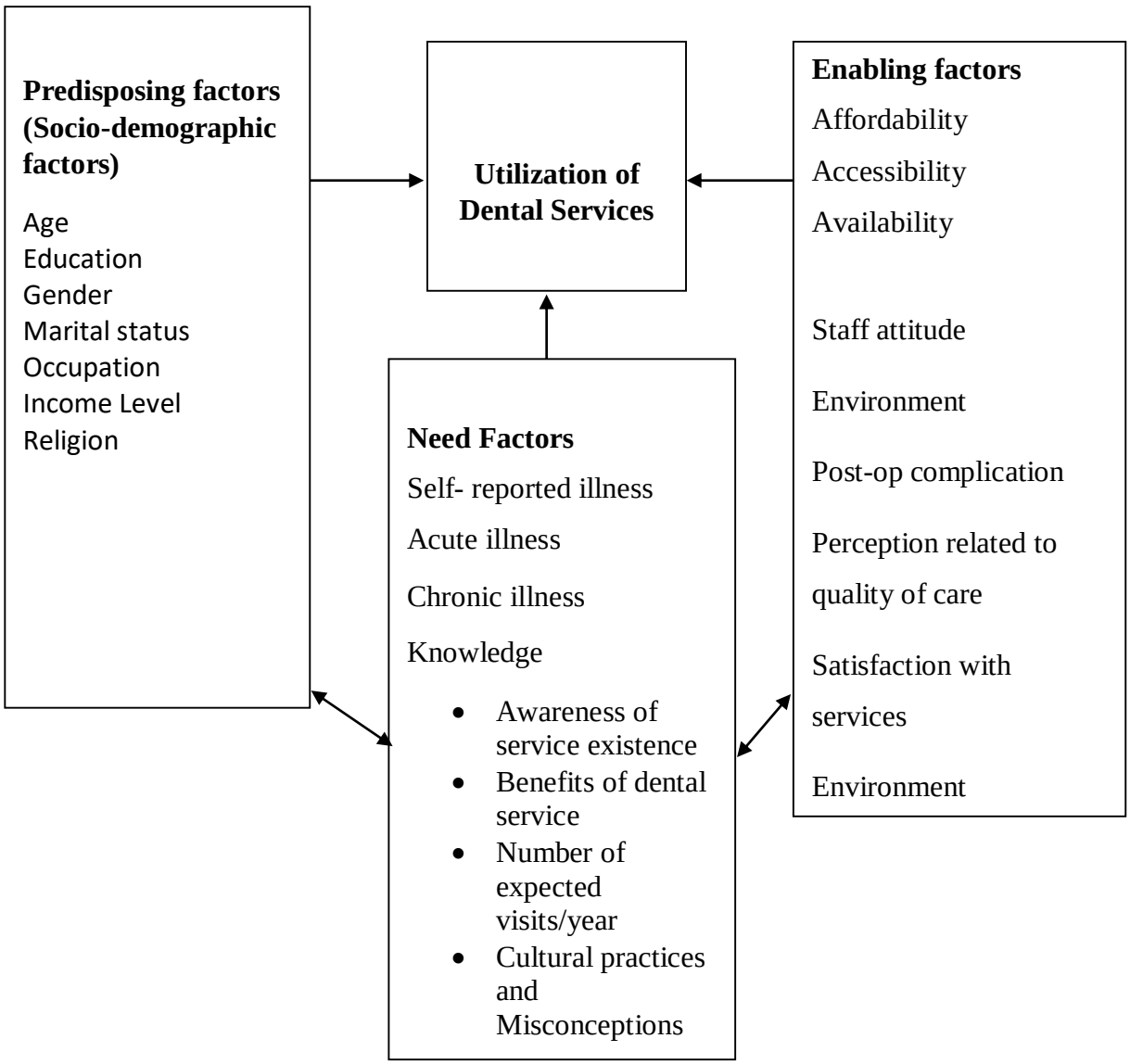

Figure 1: Conceptual framework

CHAPTER TWO

2.0 Literature Review

2.1 Introduction

This chapter reviews various studies done related to variables under investigation in the conceptual framework as well as some theoretical framework on health service utilization. It focuses on the factors affecting utilization of dental services, which are categorized as predisposing factors, enabling factors and need factors of dental services according to the adopted Anderson's model of health belief. It also outlines some statistics on dental service utilization as well as proportion of patients who utilize dental services.

2.2 Behavorial model

The behavior model of health services utilization has been the main emphasis of significant theoretical and research attention.

There are four major types of utilization models. Namely, models of patient decision making, consigned in sociological philosophy and research; the health belief model, in psychological concept; economic models of the plea for medical care; and the behavioral model of health services utilization that has directed much health services study on access to and heath care service utilization (Aday et al, 2014). Since this research also seeks to identify the very dynamics, enablers or inhibitors to service utilization, the behavioral model has been chosen.

It classifies predictors of service utilization into three determinants. Predisposing factors: they increase the chance of using services (age, gender, education, occupation, marital status, income level, religion). Enabling factors: that may facilitate or prevent service use (income, place of residence, cost of service, and quality of service). From his model, the enabling factors could be

facilitators and/or barriers to service utilization. Need factors: they represent the immediate cause of health service use (self-perceived health status, chronic or acute illness), (Babitsch et al, 2012)

2.3 Utilization of dental services

Dental service utilization explains the attendance of individuals to dental health facilities in pursuance of care (Nasir et al., 2009). That is, the commonest estimate of service utilization is the number of dental visits per person per year. Routine dental consultation is estimated to be every 6 months for children, teenagers and the elderly or each year for healthy adults (WHO 2012). One of the surest ways of early recognition and prompt treatment of dental ailment to prevent complication is through utilization of its services.

However, this information appears to just be in the known but not fully practiced, as the statistics for utilization is still on the decrease. In India, about 25,000 dentists graduate annually from the over 289 existing dental institutions (Ambika et al, 2015). Despite the large working class, majority of the Indian population suffer from poor access to fundamental dental care. There is an appreciable disparity with regards to the ratio of dentists to population in both rural and urban communities; with 1:10,000 in urban and 1:150,000 in rural setting. Notwithstanding the equity gap in access, patients self-finance dental services rendered to them in both private and public facilities (Ambika et al, 2015).

According to a national study in US, only 41-50% of the populace utilize dental service, even though experts recommend regular visitation (Nasseh et al, 2015), supporting the aforementioned argument of dental service underutilization.

2.4 Quality of care

Quality of care is measured by the extent of good health outcomes caused by service delivery on individual and populations. These are consistent with recent professional knowledge (Griffin et al, 2010). Useful qualitative indicators, coupling other approaches such as qualitative analysis of specific activities, could monitor quality of health care.

Indicators of quality of care can be categorized into structural, process and outcome indicators (Herndon et al, 2015). 'Structure' refers to the setting within which care happens. This involves material and human resources and organizational structure. Facilities, equipment and financing, constitutes material resources. Qualification of personnel constitutes human resources. Methods of peer review, reimbursement, medical staff, etc. makes up the organizational structure.

'Process' refers to the systematic activities in rendering and obtaining care. It involves diagnosis making, treatment and establishing good patient interaction.

'Outcome' denotes the effect obtained from rendering care to an individual or population. One of the major factors that determine patient satisfaction with care given is the improvement in patient's knowledge, and behavior change modification that is encompassed in outcome of care.

Quality care should be easily accessible, acceptable, good and ethically adhered to (Johara et al, 2009). It should be imbibed with the activities of caring, competence, confidence, compassion and knowledge based skills (Baâdoudi et al, 2016). It should be noted that, an effective and efficiently delivered health care should be centered on quality. Good quality healthcare will promote utilization, whereas the otherwise will discourage service utilization.

2.5 Proportion of patients that access dental services

United State population has seen major changes in its dental service utilization (Nasseh et al., 2015). Utilization of dental care was at its peak among children in the year 2013. Utilization among the working class stabilized from 2012 to 2013, after years of trend reduction. There was also significant reduction in service utilization in 2003 among working adults. This was partly due to only a small proportion of individuals having private visitation (Nasseh et al., 2015).

There has also been an increase in service use among children over the past decade, more so among those from poor homes (Nasseh et al, 2014). The disparity in dental service utilization has been closed significantly between low and high income children groups, whiles that for adults has broadened (Nasseh et al, 2014). The American Dental Association's Health Policy Institute (HPI) has played a pivotal role in dental service utilization studies (American Dental Association 2016).

Currently, one of the biggest issues with oral health care in Africa is the wide gap between the availability of services offered for the wealthy and the lack of services for the poor, largely living in rural areas (WHO Regional Office for Africa, 2014).

In 2014, only 7 out every 100 of 12 year olds in Burkina Faso had never been to a dentist, and this was also the case with 61% of 35-44 year olds living there ((Josefczyk, 2015). In Madagascar, 83% of 12 year olds had never received dental care (Josefczyk, 2015).

Many countries in Africa, Asia and Latin-America have a shortage of oral health personnel and by and large the capacity of the systems is limited to pain relief or emergency care. In Africa, the dentist to population ratio is approximately 1:150000 against about 1:2000 in most industrialized countries. (https://www.who.int/oral_health/action/services/en/retrieved, May, 2019).

2.6 Factors Influencing Utilization of Dental Services

This sub-section illustrates the conceptualized factors that influence utilization of dental service. They include predisposing factors, need factors and enabling factors.

2.6.1 Predisposing factors

This sub-section presents literature related to the predisposing factors influencing utilization of dental services.

Socio-demographic factors

Inequalities in socio-demographic characteristic produce health disparities in the world, including oral health (WHO 2015). Due to contextual variations in socio-demographic factors, different studies have shown variable associations between the various demographic factors and utilization of dental services (Herkrath et al, 2018). According to research conducted by Gupta et al (2012), socio-demographic factors that were found to influence utilization among the rural population of Jaipur, India, included, education, occupation, socio-economic status/income level, and age.

Those with high educational level, high occupation group, and high socio-economic status (income level) better patronized dental care as against those with low middle-income level, illiterate and low social class. This could be partly explained by the fact that, the former have enough information on benefits and complications from late dental presentation and are financially sound enough to access health care. These results are consistent with research done by Bhushan et al. (2012) in India.

Age as a determinant of dental service utilization has also been given much study. Disparities in service use between the aged and young have been seen in previous studies (Dye et al, 2011).

Nearly about 100% of the adult populations over the past 5 years have not used dental services as against 11% in those below 35years in a study conducted in India (Panchbhai 2012). High cost and lack of access were revealed as fundamental barriers for dental service underutilization among the elderly in a study conducted in Switzerland (Peterson et al, 2010). It was also found in other studies that, most of the elderly did not recognize the dying need for dental health care (Herkrath et al., 2018; Gupta et al., 2014).

Adults are more likely to have the notion that disease and inabilities are inevitable. Studies conducted on all age ranges revealed that those who were old consented to the statement that "A person has to expect a good deal of illness and some aches and pains, especially when he is old" (Borreani et al, 2010). This pre- conceived statement of diseases being as a result of aging, provides the basis of elderly coping with diseases they ensue. However, it is a major barrier to early reporting of diseases for prompt care, to prevent complications (Abott et al., 2013)

The Swiss Federal Statistical Office, Switzerland, estimated 67%of the 55-63 year group, visited dentist regularly as opposed to greater than 80%, visiting a primary health physician. Those 75 years and above had 40% of them no longer visiting a dentist with over 90% visiting a specialist or primary health care doctor (Nitsche, 2015).

The plausible reason for the decline in service utilization was because, they often spent more time and money visiting the general practioner than the dentist (Nitsche, 2015). This is further evidenced by a Brazilian research conducted by Mullachery et al. (2008), which explained that dental care utilization and frequency of dental services utilization was seen more among the young than the old.

Females are generally believed to have better health seeking behavior than males due to obvious reasons (Ferraro et al, 2010). They often share their problems; they do not internalize pain as against their counterparts who are more secretive. However, due to the effect of several other confounding factors believed to influence utilization of health services, sex as a determinant of health seeking behavior does not always show significant association with utilization (Barker et al., 2014).

According to Poudyal et al., (2010), in Mangalore, there was no difference in dental service utilization between males and females. This finding was however different from that of Lukacs (2010), where females utilized dental services more.

The patient's educational level can significantly affect his or her level of health care utilization, in addition to recognizing the relevance of early dental care visit. Low level of education has been found to be the main contributing factor to dental service underutilization (Chou et al, 2011). Studies have argued that the absence of education can affect an individual's level of understanding of information given and ability to make right decisions concerning their health (Figueira et al, 2008). The implication is that, those with low educational status may not recognize the need to access routine dental services.

Conversely, those with high level of education have been found to enhance and reinforce health seeking behaviour (Dupas, 2011).

Those with high educational status were found to better patronize dental service as compared with their counterpart with lower education level (Bhushan et al., 2012). This could possibly be explained by the fact that the former have enough knowledge and information first, about the existence of dental services and secondly the importance of regular dental visitation.

Marital status could influence health care seeking behavior (Chaibva, 2008). It has been documented that unmarried clients have higher chance of underutilizing health care due to lack of spousal support (Chaibva, 2008).

On the other hand, it has also been observed that married patients may be deficient in their ability to make own informed decisions regarding their health (Lindstrom, 2009). Thus, the power to make health decisions relies more often than not, solely on their spouse and other powerful family members (Okunseri et al, 2009). Meaning that, the effect of marital status on health seeking behaviour is contextual, with majority of the cases, experiencing positive association with utilization of health service. According to a research conducted by Kim (2016) in Korea, most participants utilizing dental services were married (around 70%), while 18% of them were single.

Occupational status and Income level (both real and perceived) are important conjecturers of health service use (Vazuquez et al, 2015). According to a survey done in Australia, findings suggested that, manual workers were less likely to have dental visits in the past year than other occupational workers (Roncalli et al, 2014). The odds of utilizing dental services having had extraction at one's last visiting among blue-collar workers were 2.5 times that of those in managerial or professional occupations (Singh et al., 2014).

Poverty and race were found to be significant predictors of utilization according to a survey of black and white adults in Florida (Singh et al, 2014), in that, the lowest rates occurred more among the financially underprivileged African- Americans. The odds of service utilization among the non-poor African-American was same as that of the impoverished whites in this study (Cohen et al, 2011). The perceived ability to pay for dental care as well as income level were significant predictors of utilization. According to Vashisth et al, (2012) the odds ratio of service utilization

among poor older adults was 0.55 times that of high income group. It is obvious from above that, income level and one's occupational status are both significant contributors to service utilization.

It is believed that religion plays an essential role in health and service utilization for that matter. Due to the current dispensation of increasing spirituality worldwide, majority of people prefer to associate their ailment to spiritual origin rather than coming to hospital to seek for care (Butani et al, 2008).

They will often spend most of the time within the natural history of disease visiting their spiritual leaders and when they become unsuccessful, they come to the health care provider as their final resort to health, by which time it is often late. Despite this foundation truth, some others still patronize health care as early as the onset of disease.

Due to contextual variations, research conducted by Poudyal et al. (2010), also showed differences in level of utilization of dental care among some religious groups in Mangalore. Hindus (59.9%) were in the majority, with 34.6% Muslims and the least being Christians (5.5%). Due to the low percentages of Christians and Muslims, the variable, religion, was sub-divided into Hindus (59.9%) and 40.1% non-Hindus, for easy statistical analysis with significant statistical results.

2.6.2 Enabling factors (Enablers / Barriers)

This sub-section presents literature related to the Enabling factors influencing utilization of dental services.

This section looks at the factors that will encourage service utilization and those that will hinder service utilization. It will look at factors such as staff attitude, environment, affordability,

availability and accessibility of dental services. These factors are thought to have significant influence on service utilization.

Generally speaking, attitude of providers personnel, skills of service provider, quality of the service provided, cost of services provided and even location of dental clinic significantly determine client's satisfaction with services provided and hence, its influence on service utilization (Prakash, 2010).

A study conducted in Saudi Arabia to examine factors that influence dental service utilization indicated quality of dental care as one of the most significant positive determinants (Quadri et al., 2018)This was consistent with the multivariate analysis results; which documented quality of dental care as having a significant relationship with service utilization (Al-Husssyen, 2010). This finding also explained why they were very satisfied with services rendered. The services met the suggested quality of care indicators.

In the above studies, the presence of friendly staff, patient centered appointments, good recommendations from friends who have utilized the services, were major contributing health care provider factors. Agarwal and Murinson, (2012) also reported that, good patient doctor relationship, welcoming health team and good communication skills were promoters of health service utilization. On the other hand, Ha and Longnecker, (2010) reported that, inhibitory health care provider and facility factors to dental service utilization were, inconvenient appointments, poor communication skills and staff unfriendliness.

Again, in these above research, patients were more likely to visit clinics with dental specialist than those with general dental physicians. This however, revealed that, health care provider skills play an important role in determining one's choice of dental visit. Again, in the same research

conducted, fear of experiencing post-operative complications following a dental procedure was a barrier to dental service utilization. Implying that, a dental practitioner with fewer post-operative complications is more likely to attract patients than a counterpart whose clients frequently experience post op complications (Al-Hussyeen, 2010).

Environment

A study in five sub-Saharan African countries of Ghana, Nigeria, Kenya, Zambia and Uganda showed that there has been little action by government to make the deployment patterns in favor of rural areas (Adebayo et al, 2014). These studies indicated that most relatively well-equipped hospitals and health units were also found in urban environments.

The quality of services provided in the rural areas was far lower compared with the urban facilities (Adebayo et al, 2014). This disparity in health service has necessitated a move by the sub-region and Ghana for that matter to initiate attainable and realistic health policies that seek to breach this equity gap.

Results from some studies revealed that the location and design of the dental clinic could be a basis for attracting clients to further patronize the dental facilities they visited (Wall et al, 2012). Well-equipped dental facilities with appropriate dental chairs and equipment made service provision holistic in meeting the clients need hence encouraged them to patronize dental services timely as scheduled by their dentist (Manski et al, 2012).

Affordability of dental services

One's ability to access health care also depends significantly on his or her ability to pay for the service (Muirhead et al, 2009). In Ghana like most other countries, dental care is relatively more expensive than general health services. Just a few dental procedures such as tooth extraction, scaling and polishing among other few other procedures are partially covered by the National Health Insurance Scheme. These partially covered services must be complemented by co-payments sometimes. It is obvious that, health financing dental service delivery; an important component of the health system is given little attention, as most patients would have to pay for majority of the services received. This health system disparity could partly account for the relatively lower service utilization in dental care than other health service delivery (Ramraj et al, 2013).

Dental indemnity coverage and patronizing dental services has been a major area of concern and deliberation (Locker et al, 2011). The geriatrics with private insurance visits their dentist more frequently than their counterparts. According to a research conducted in US, the equity gap between dental need and service utilization has been found to be because of individual self-financing of service. E.g. out-of-pocket payment. The study again indicated, insuring dental patients, relief them off their health financing challenge, but does not do away with the price gap (Wall et al., 2012).

There are unmet population needs for oral health care in countries like Tanzania where the government's oral healthcare budget was inadequate to meet the increasing oral health needs of the population (Astrøm & Kida, 2007).

In 2014, the University of Ghana Hospital recorded more than 7,800 dental cases (GHS, 2015). Basic dental treatments are covered by the National Health Insurance (NHIS) and other private insurance providers but dental patients are compelled to make out-of- pocket payments when more advanced dental treatments which are not covered by the NHIS are required. A study in Ghana by Maxwell, 2010 states that at the beginning of the year 2000, the share of households out of pocket (OOP) payment to total health expenditure in Ghana was considerably higher than the regional average for Sub-Saharan Africa (50 percent versus 39 percent respectively in 2006) according to WHO (2010). Healthy life is worthy of living but as has already been noted, financial barrier is a major obstacle to health care delivery and accessibility. It is in confirmation of this that Ministry of Health (MOH) in its earlier report, under the policy framework of the national health insurance scheme states: "The implementation of the "cash and carry" system compounded the utilization problem by creating a financial barrier to health care access especially for the poor.

It is estimated that out of the 18% of the population who require health care at any given time, only 20% of them are able to access it". In the quest for attaining middle income levels by the year 2020, as enshrined in Ghana Poverty Reduction Strategy document (GPRS, 2003), these health outcomes are not only disturbing but unacceptable for middle income status.

A number of good health financing policies have already been tried in our health delivery systems in Ghana, ranging from „free health care", "token fees" to the „cash and carry" systems but have all either failed or proven to be unsustainable with dire consequences on the people, especially the core poor in society (Paul, 2011).

Governmental organizations globally, are more interested in dealing with the outrageous pricing of general hospital services rather than price challenge with dental care (Survashe et al, 2018).

Higher cost of dental services as a barrier to dental service utilization was reported by the patients in study to determine barriers to dental service utilization. (Nagarjuna et al, 2016)

Availability and accessibility of dental service

The patients also reported the distance from home as a barrier to dental service utilization (Jain et al., 2013). In rural and hard to reach areas where health care is far away from most homes, clients often report geographic inaccessibility as a major obstacle to health care. They would have to travel a very long distance before accessing health care. This however often discourages them, making them resort to alternative medical care, which is often closer to them. Inequity in access to dental services, exemplifies the nature of dental service utilization with its attendant poor oral health related quality of life among the disadvantaged and socially marginalized dental category (Carreon et al, 2011).

Dentistry is categorized into the field of cure and that of prevention. The former is technically involving and more expensive than prevention. This brings before the patient, a very different perception of dentistry, more importantly regarding the cost involved in treatment. E.g. cost involved in root canal treatment and dental rehabilitation. This cost element indeed captures financial accessibility as a very important determinant for health service utilization (Locker et al, 2011)

Additionally, the above issues of availability and accessibility of dental services, cannot be treated in isolation from the political and economic structural context of the community. It has to be treated in unison not forgetting the fundamental components of health living. It is therefore clear that both

availability and accessibility of dental services in a community significantly affects service utilization (Gavett, 2015).

2.6.3 Need factors

This sub-section presents literature related to the need factors influencing utilization of dental services.

Cultural Beliefs

Some researchers argue that the cultural context of any given program cannot be underestimated, as culture and beliefs have been found to be major determinants of service utilization (Butani, 2008). Some studies have postulated that reasons for underutilization of services, objections to referrals as well as indecisions with regards to the need to seek urgent health care, are based on cultural beliefs (Henderson et al, 2008).

Up until recently, when health education has been intensified, majority of people did not recognize dental ailment as a condition to bring to hospital for care. They often will use herbal preparations for cure, and when complications such as dental abscess and cerebral abscess set in, they would then rush in to the hospital (Kochlar et al, 2014). All these could be better appreciated, when health is studied under one's socio-cultural context.

According to Butani et al (2008), many cultural groups lack strong preventive orientation in relation to oral health. Many cultures have little understanding of gum disease. Brushing teeth is purposely for removing left over food from oral cavity, but the concept of plaque and removal is not well appreciated.

The use of modern methods of oral hygiene such as dental floss, mouth rinse, and tongue cleaners is often viewed with doubt. Oral pain is treated using culturally accepted means passed down

through progenies (Vani et al, 2010). For Example, some African-American families use cotton balls soaked in aspirin solution, alcohol or salt water as a home remedy for pain and swelling (Chandra et al, 2009).

2.6.3.1 Knowledge of dental services

Awareness and benefits of dental services

Being better informed of the existence of dental care services, the need to patronize its services and attendant benefits play an essential role in determining service utilization (Kwan et al, 2010). Those who fall in this category often patronize dental service as compared with those who have little or no knowledge of the existence of dental services and even if they do, still have little or no knowledge of its availability in their catchment area as well as the benefits associated with regular dental visitations (Herkrath et al., 2018).

The result of a study to determine barriers to dental services utilization indicated that, respondents in the higher education group showed higher dental visits than the lower education group. This was so because, education may be correlated with high health awareness, which in turn stimulates preventive behaviour such as regular visits for a checkup (Nagarjuna et al, 2016). A similar assertion in another study claimed that, recognizing the benefits of routine dental visits often precipitated the need to regularly visit a dentist (Survashe et al, 2018).

When to access and number of dental visits

Knowledge of when to access dental care and the recommended number of dental visits is a good precedence for service utilization. Knowing when to visit a dentist and how often to do that, will improve dental health, as it is less likely for people to present late with complications from dental ailments (Mashoto et al, 2009). Routine dental consultation is estimated to be every 6 months for

children, teenagers and the elderly or each year for healthy adults. According to Nagarajappa et al., (2015), regular visits to the dentist have an inverse relationship with the presence of dental ailments (E.g. caries, teeth restoration, dental extraction needs or gum pathology). Therefore, the more dental service visit or dental service utilization, the lesser the prevalence of dental ailments.

Source of information

Health education programme should be a better avenue for intensifying dental health awareness (Amin et al, 2008). During these programmes, members should be educated by public health officers and health practioners on where, when and why to access dental care. They should be aware of the complications associated with late presentation of dental diseases, so as to deter them from seeking alternative health care, but rather report to the dentist when symptoms of dental ailment is earlier recognized (Okemwa et al, 2010; Paul,2011). Lack of adequate knowledge of the existence and availability of dental services has been cited as contributors to the poor utilization of dental services (Seli, 2017; Onyejaka et al,2016).

2.7 Summary of the literature review

Its obvious from the above literature review that, dental service under-utilization which has resulted in the increased prevalence of dental diseases, has significantly contributed to the global burden of oral diseases. Unlike most of the reviewed research that only sought to investigate factors that influence utilization of dental services, this one seeks to further categorise them into enablers and barriers.This will better provide the organizational board, with relevant information on the major hinderances to dental service utilization and then make informed descion towards improving dental care in the municipality, country and sub-region as a whole.

In addtion, as against other studies that narrowed in on age groups, this study increased the age gap to include lots of views from the wide respondents. Thus, their views on enablers and barriers to dental service utilization.

CHAPTER THREE

3.0 Methodology

3.1 Introduction

This chapter presents the methods that was applied to collect data for analysis in the study. It is divided into eight sections.

3.2 Design

The study was primarily a descriptive cross-sectional study. It adopted a quantitative approach in data collection and analysis. It quantified observations at a point in time, where both exposure (independent variables) and outcome (utilization of dental services) were measured at the same time.

Systematic random sampling was used to select study participants and a semi-structured questionnaire to collect data from these study participants. The study participants were non critically ill patients aged 18 years and above accessing dental services in the facility. The theory for the study was an adapted Anderson and Newman model of health belief centered on health service utilization.

3.3 Study area

The study was conducted at Hawa Memorial Saviour Hospital (HMSH) at Osiem in the East Akim Municipality of Eastern region. It is a mission Hospital established by the Saviour Church of Ghana, with headquarters at Osiem in the Eastern Region.

The municipality is one of the twenty-one (21) districts of the Eastern Region of Ghana. The capital is Kibi. In the 2010 Population and Housing census, the total population was 167,896 constituting 49.7 percent males and 51.3 percent females and 40% of the population is rural (GSS, 2010). Majority of the population are in the youthful age according to the 2017 Eastern regional population breakdown.

The major group is Akyems and minor tribes are Ewes, Frafras, Dagartis, Krobos, Akuapem and Ashantis etc. The main economic activities in the municipality are farming, petty trading, small-scale industries and currently small scale mining.

The road network in the municipality is good. The old Kumasi-Accra road passes through the municipal capital whiles the new road passes through Apedwa, and Asafo. All the other sub-municipalities have tarred roads with major towns linked with tarred roads. The feeder roads are also well maintained.

For health infrastructure, there are two public hospitals, one CHAG hospital (Hawa Memorial Saviour Hospital), one private, four health centers, two reproductive and Child health centers, two clinics, two private maternity clinics and sixteen functioning CHPS compounds (35 demarcated CHPS sites). Majority are Christians, followed by Muslims and the other religion. Some pertinent cultural practices that are used in mitigating oral diseases involve mainly herbal medications, over the counter drugs, among others.

Services rendered at HMSH include internal medicine, pediatrics, general surgery, obstetrics and gynecology, specialist services such as eye, dental, ENT and orthopedics

The facility was established in February 2008. Its dental facility started in the year 2014 with a staff capacity of four (4) with one dental surgeon, dental surgery assistant and two staff nurses. The dental facility has a dwindling outpatient (OPD) attendance. The total dental OPD attendance

in 2015 was 94, 132 in 2016 and down to 63 in 2017. The slight surge in 2016 immediately followed a dental community outreach programme conducted by the hospital facility. Commonly seen cases include dental caries, apical abscess, periodontal diseases, tooth extraction for caries, scaling and polishing and occasionally tooth replacement.

3.4 Study population

The target population consisted stable and cooperative (thus non critically ill patients) patients aged 18 years and above accessing dental services at the Hawa Memorial Saviour Hospital. This population was targeted since they can give detailed information on their experiences with dental services offered for their respective visits in the dental facility.

3.5 Inclusion criteria

Patients aged 18years and above accessing dental services in the facility.

3.6 Exclusion criteria

Patients aged 18 years and above who are critically ill and accessing dental services in the facility (cannot cooperate with data collection).

3.7 Variables

The outcome variable for this study was utilization of dental services while the independent variables were predisposing, enabling and need factors. Details of these variables are shown in the table below.

Table 3.1: Study variables

Variables	Description	Measurement
Dependent		
Utilization of dental service	Annual number of dental visits per person	As stated by respondent How many times in the past year have you visited the hospital for dental services)
Independent		
Predisposing factors (Socio-demographic factors)		
Age	Age at last birthday	As stated by respondent
Sex	Either male or female	As stated by respondent
Level of education	Primary, Secondary, Tertiary, or No formal education	As stated by respondent
Marital status	Married , Divorce, Co-habiting, Single	As stated by respondent
Occupation	Kind of job or client's profession	As stated by respondent
Religion	Christian, Islamic, Traditional, Others specify	As stated by respondent
Income level	Monthly income obtained/Amount of salary or wages earned from job	As stated by respondent
Enabling factors(Enablers/ Barriers)		
Affordability	Is service covered by NHIS or Out-of-pocket? If so, is it expensive?	As stated by respondent
Accessibility	Distance of facility from home. Is it near (walking distance), far or very far?	As stated by respondent

Variables	Description	Measurement
Availability	Adequacy of dental services. I.e. required number of dental personnel, dental chair, etc.	As stated by respondent
Attitude of health personnel	Friendly ,humaneness, good communication and inter-personal skills	As stated by respondent
Post op complications	Any previous complications from dental procedure or heard of any dental post- operative complications in the facility	As stated by respondent
Environment	Cleanliness of the surrounding. Is the environment quite or noisy? Design of the facility attractive enough?	As stated by respondent
Perception of quality of care	Are you satisfied with quality of care offered you? (Thus was service rendered effective in managing your dental ailment?)	As stated by respondent
Need factors		
Knowledge of Dental Service		
Source of information	Friend, relatives, internet. Others specify	As stated by respondent
When to access	Examining client's knowledge of when to access dental services. What health conditions will necessitate dental visit?	As stated by respondent

Variables	Description	Measurement
Time of 1st visit	When was client's 1st visit to dentist	As stated by respondent
Number of dental visits		As stated by respondent
Benefits of dental services		As stated by respondent
Awareness	Awareness on the existence of available dental facilities, need to access services	As stated by respondent
Cultural practices and Misconceptions	If there exist any belief that hinders access to dental services	As stated by respondent
Self- reported illness	Whether client willingly report his or her illness to the facility	As stated by respondent
Acute illness	Whether illness had a short history	As stated by respondent
Chronic illness	Whether illness had a long history or it is a condition previously seen for which review is sought	As stated by respondent

3.8 Sample Size Determination

In order to obtain an appropriate sample size for the study, the formula for estimating a single proportion with absolute precision was used to calculate sample size. The formula is denoted as follows:

$$\mathrm{n} = \frac{Z^2 p(1-p)}{moe^2}$$

Where: n: required sample size z: standard normal deviate of a 95% confidence level, P=31.9% (Andra Pradesh research on dental service utilization), moe= absolute precision of 9 %(0.09)

Calculated as follows:

$$n = \frac{1.96^2 \times 0.319(1 - 0.319)}{(0.09)^2}$$

n= 103

Therefore, the sample size of 103 was used accordingly.

Adjustment for a 10% rate of non- responses of 10.3 yielded a final sample size of 113.3 ~ 113

3.9 Sampling

The study adopted a systematic random sampling approach. The estimated daily attendance at the facility was 8. Five (5) interviews were conducted a day over a 23 day period between August-September, 2018. With the estimated daily attendance around 8, the sampling interval was calculated by dividing 8 by 5 to obtain 1.6 which is approximately 2. After which a random number was selected between 1 and 2 i.e. the sampling interval as the starting point. For this research the starting point was the number 1. Then every 2nd person was selected until the total sample size of 113 was obtained.

3.10 Data Collections Tool

A structured questionnaire was used to collect the data in this study. The questionnaire composed of both closed ended and open ended questions. Questionnaires were used for data collection because they offer considerable advantages in the administration: questionnaires present an even

stimulus potentially to large numbers of people simultaneously and provide the investigation with an easy accumulation of data. They give respondents freedom to express their views or opinion (Barberi et al, 2008).

The questionnaires were divided into three sections. The first section asked questions relating to client factors or predisposing factors (socio-demographic characteristics) influencing the utilization of dental services at Hawa Memorial Saviour Hospital. Section 2 inquired about enabling factors influencing the utilization of dental services at Hawa Memorial Saviour Hospital. Section 3 asked questions relating to need factors influencing the utilization of dental services. Two trained research assistants administered the questionnaires. Each questionnaire was administered within 20-30 minutes.

Utilization was measured as a binary variable where two or more visits will be considered adequate and less than two considered inadequate. The questionnaire was developed by the researcher based on the objectives and conceptual framework.

3.11 Quality Control

Sansoni et al. (2010) defines quality control as the technique involved in administering the same instrument twice to the same group of subjects. The questionnaire was administered to ten (10) respondents selected for the pilot study within an interval of one week. The final questionnaire was evaluated for validity as well as internal consistency. Cronbach's alpha was used to check for internal consistency. Pearson Product Moment Correlation Coefficient (r) of 0.6 was calculated for each questionnaire. Scores obtained from the pretest was correlated to get the coefficient of reliability.

Two research assistants were recruited and trained to assist in the data collection. Training touched on issues of confidentiality, professionalism among others. Written protocols and reference guides were given to the research assistants to use during the data collection period. Supervision was key in ensuring that the data was collected as required.

The collected data was saved on a Google drive (cloud storage) with adequate password to ensure data security and data loss.

3.12 Training of interviewers

The principal investigator organized a training session for all interviewers and accompanied them to the field for the pretesting of the data collection tools. The observations and lessons learnt during the pretesting were used to retrain the interviewers.

3.13 Pretesting of the Instruments

The study instrument (questionnaire) was pre-tested on patients (with similar characteristics) who were randomly selected other than those to be interviewed for the main study. After the pre-testing, the questionnaire was modified where needed.

3.14 Data processing

Regular verification and validation of data was done with all inconsistencies checked and resolved between the researcher, research assistants and the data entry clerk. All data collected was cleaned, entered into a computer and processed using STATA Version 15 Software.

3.15 Data analysis

Pre-coded data was entered into Microsoft excel spreadsheet and was imported into STATA version 15.0 for statistical analysis. In descriptive analysis, mean age and mean income were computed with their respective standard deviations. Percentages and frequencies were computed for socio demographic variables; sex, marital status, educational level, and religion.

Proportion of respondents who adequately utilized dental services (2 or more times per year) was also recorded with the 95% confidence interval. Furthermore, a preliminary Chi square test of association between independent variables and the outcome variable was done.

However if at least one variable within a particular category shows statistically significant association with the outcome variable then it is followed with a simple logistic regression to determine both the association and strength of association with the outcome variable (Utilization of Dental Services). For example, the category dental treatment had all its variables not been statistically significant from the Chi Square test of association with dental service utilization. Hence a simple logistic regression was not followed. Hence Chi Square test of association was done for the categories, conditions and type of treatment received. Variables that showed statistically significant associations in the simple logistic regression included educational level, religion, time of travel to facility (in minutes), prior knowledge on existence of dental facility, amount paid out-of-pocket for dental services and personal decision to visit dental facility.

These significant variables were fitted into a final multiple logistic regression to determine factors associated with utilization of dental services at the Hawa Memorial Savior Hospital. Crude and adjusted Odds ratios were reported with their 95% confidence intervals with statistical significance set at $p< 0.05$.

3.16 Ethical Considerations

3.16.1 Ethical clearance

Ethical clearance for this study was obtained from the Ghana Health Service Ethics Review Committee as a way of ensuring that the study conformed to the full requirement of research using human subjects. The data collection commenced after receipt of ethical clearance. A letter of introduction seeking approval to use the facility for the study was sent from the School of Public Health, College of Health Sciences - UG, to the District Director of Health Services - East Akim and the management of Hawa Memorial Saviour Hospital.

3.16.2 Participant's consent

A participant's consent form was developed to either be signed or thumb printed by participants (see appendix C). Written informed consent was obtained from the individuals in the communities who agreed to be part of the study, especially for those who had to thumb print the consent form.

3.16.3 Voluntary consent

Participation in the study was voluntary and participants were free to opt out any time during the study, without any penalty in opting out.

3.16.4 Privacy and confidentiality

All data obtained with the hard copy of the questionnaire would be destroyed after a period of one year. The soft copies would be deleted from the personal computer and external drive after five years of the study.

3.17 Reward

There was no reward of any kind for the participants involved in the study.

3.18 Potential risks/benefits

The study did not pose any harm to the participants, but rather, the results of the study would help strengthen dental health care provision in the country. The respondents' involvement in this study was through the questionnaires and therefore, were not exposed to any form of risks.

3.19 Compensation

There were neither financial benefits nor other materialistic benefits to participants.

3.20 Protocol amendments

In the event of any changes to the title or study location in the course of the study, this was communicated to the ethics review committee accordingly.

3.21 Conflict of interest

There was no conflict of interest whatsoever related to the study. The study was solely for academic purposes and responses to the questionnaires would be used as such.

3.22 Funding information

The total cost of the funding for the entire research was borne by the researcher.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic characteristics of respondents

The results in **Table** 4.1 below shows the socio-demographic characteristics of respondents. All questionnaires were completed. The mean age of respondents was 50.9 years ± 18.3 SD. Females were in the majority 68.1% (77/113). Most of the respondents were married making up 41.6% (47/113). Sixty two percent of the respondents were employed (71/113). Majority of the respondents had some form of formal education 88.5% (100/113). Christians were in the majority 92.0% (104/113). The mean income was GH¢765.0 ± 422.4SD.

Table 4.1: Socio-demographic characteristics of respondents (n = 113)

Variables		Frequency	Percent (%)
Mean Age (M ± SD)	**50.9years ± 18.3SD**		
Sex			
Male		36	31.9
Female		77	68.1
Marital Status			
never married		20	17.7
Married		47	41.6
Living together		5	4.4
Divorced		15	13.3
Widowed		26	23.0
Employment status			
Unemployed		30	26.6
Self employed		46	40.7
Public sector		20	17.7
Private sector		5	4.4
Student		12	10.6
Educational Level			
No education		13	11.5
Primary		22	19.5
Junior high school		41	36.3
Senior high school		11	9.7
Tertiary		26	23.0
Religion			
Christian		104	92.0
Muslim		8	7.1
Traditionalist		1	0.9
Others		0	0.0
Mean Income (M ± SD)	**GH¢765.0 ± 422.4SD**		

4.2 Dental Service Utilization

Twenty seven percent (31/113) of respondents adequately utilized dental services with a minimum of 2 visits (p = 27.4%, 95% CI = 19.5 – 36.6%). (See Figure 4.1)

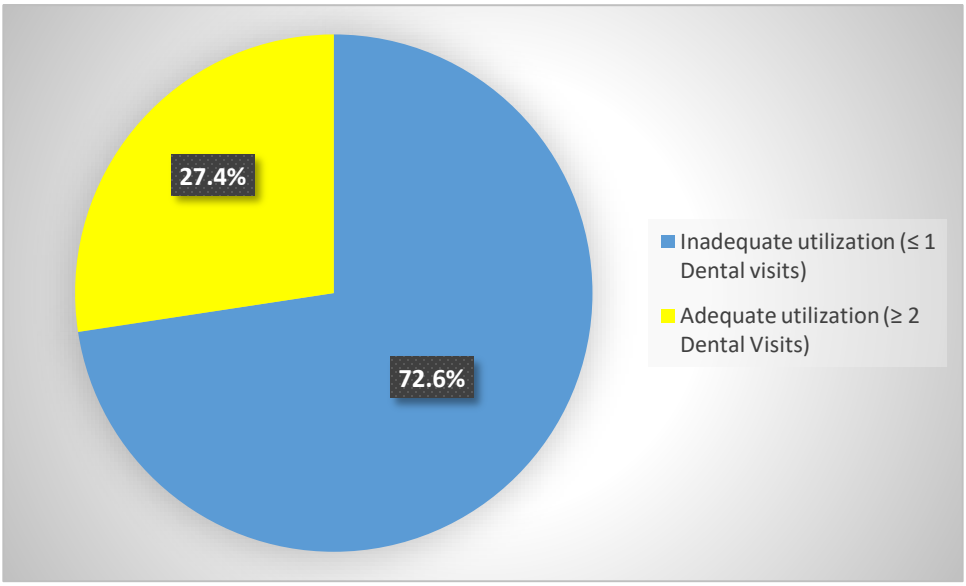

Figure 4.1 Proportion of adequate utilization of dental services among respondents

4.3 Conditions presented at dental facility

Majority of respondents 85.8% (97/113) cited toothache as a condition that brought them to the facility, 80.5% (91/113) also cited gum disease as a condition and 24.8% (28/113) also cited mouth sore as a condition that brought them to the facility. This was a multiple response question (See Figure 4.2)

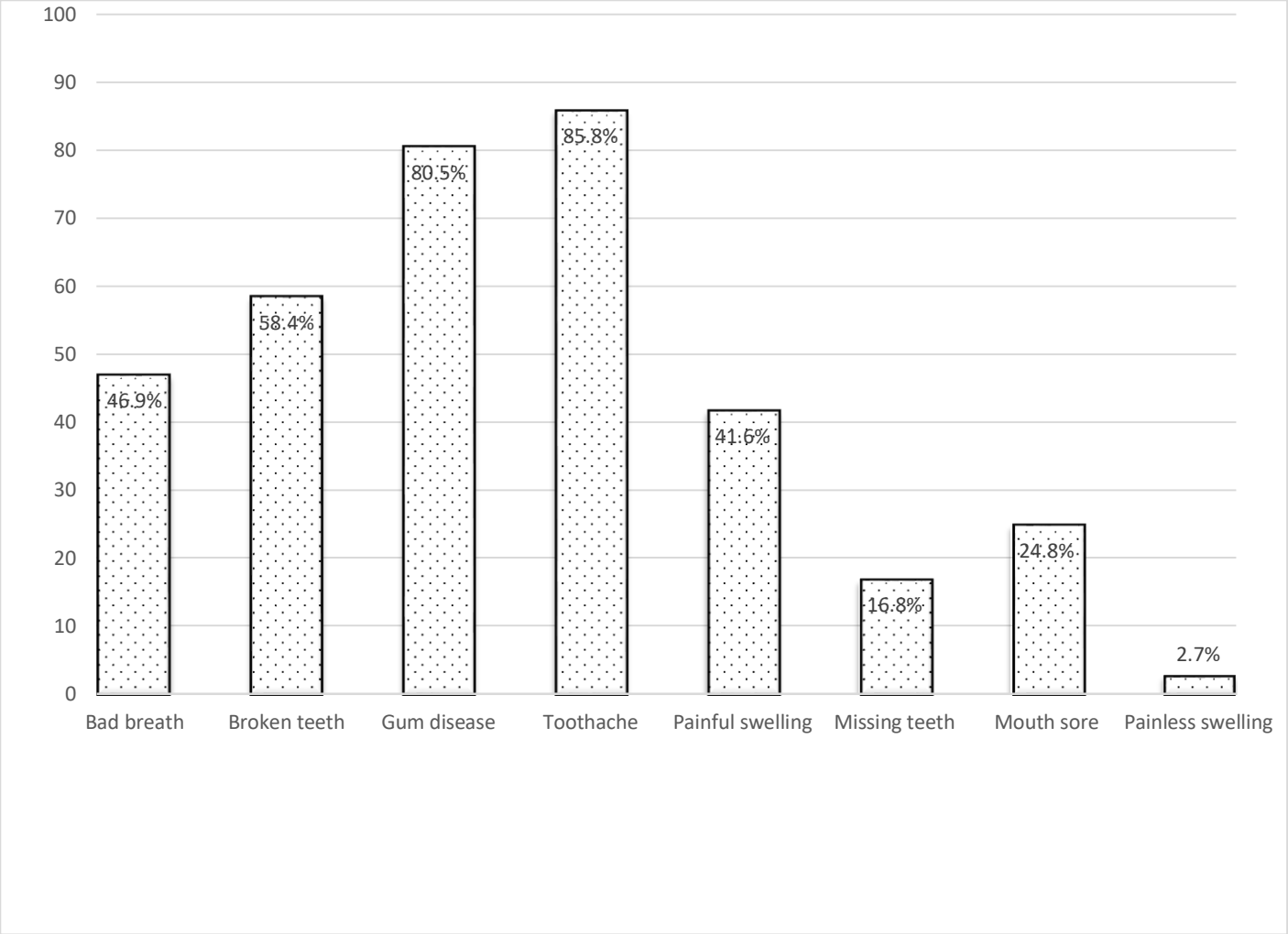

Figure 4.2: Various dental conditions presented to the dental clinic

4.4 Type of treatment

Majority of respondents 84.1% (100/113) indicated medication as the type of treatment they received at the dental facility and 13.3% (15/113) also indicated dentures. (See Figure 4.3)

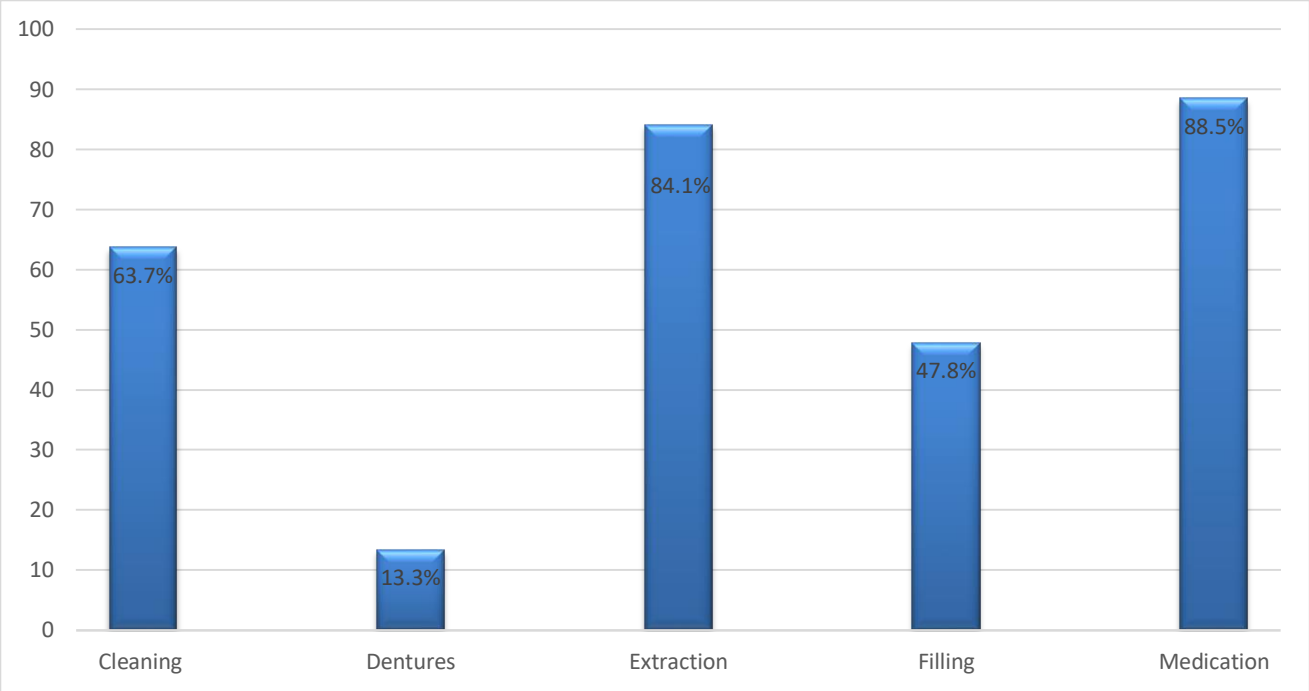

Figure 4.3: Types of treatments received at the dental clinic

4.5 Enablers of utilization of dental services

Majority of respondents utilized dental services due to chronic dental conditions 71.7% (81/113) and 48.7% (55/113) did so during routine check-ups. (See Figure 4.4)

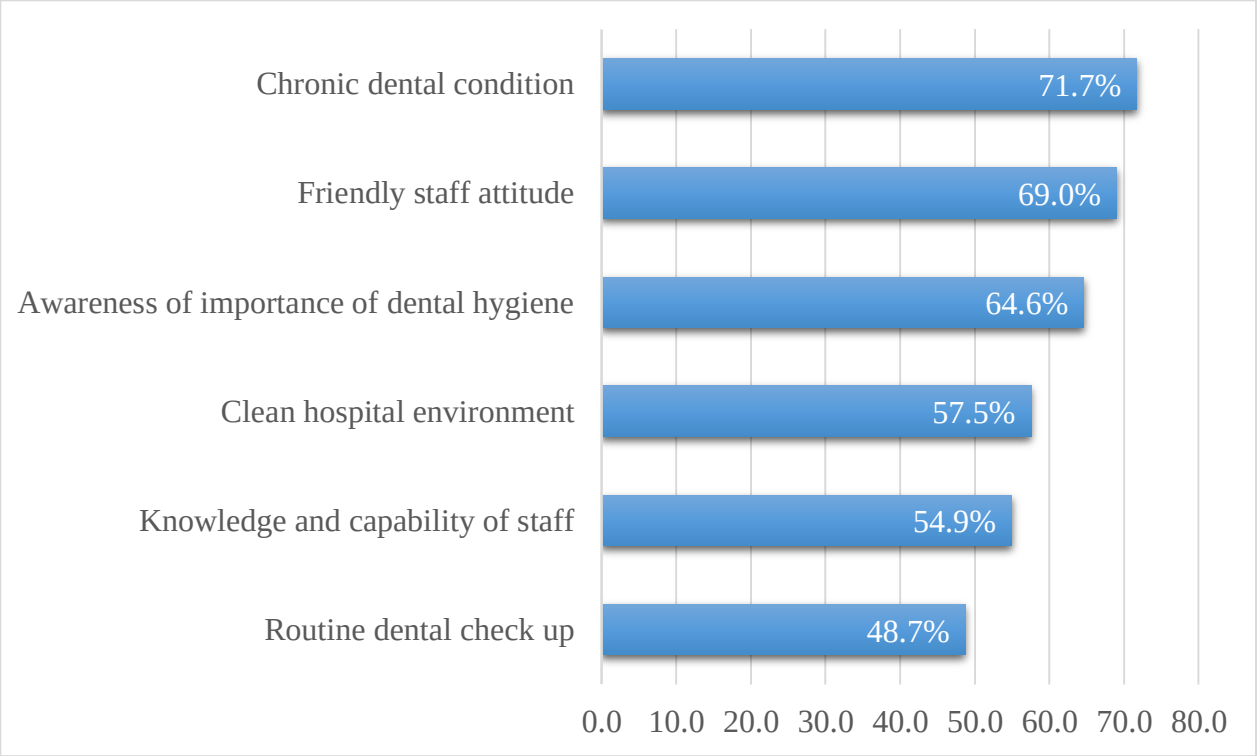

Figure 4.4: Patient perspective of enablers of dental service utilisation

4.6 Barriers to utilization of dental services

Majority of respondents 78.8% (89/113) cited cost as a reason for inadequately utilizing dental services, 55.8% (63/113) also cited the distance as a barrier and 24.8% (28/113) also indicated an unfriendly hospital environment as a reason for not adequately utilizing dental services. (See Figure 4.5)

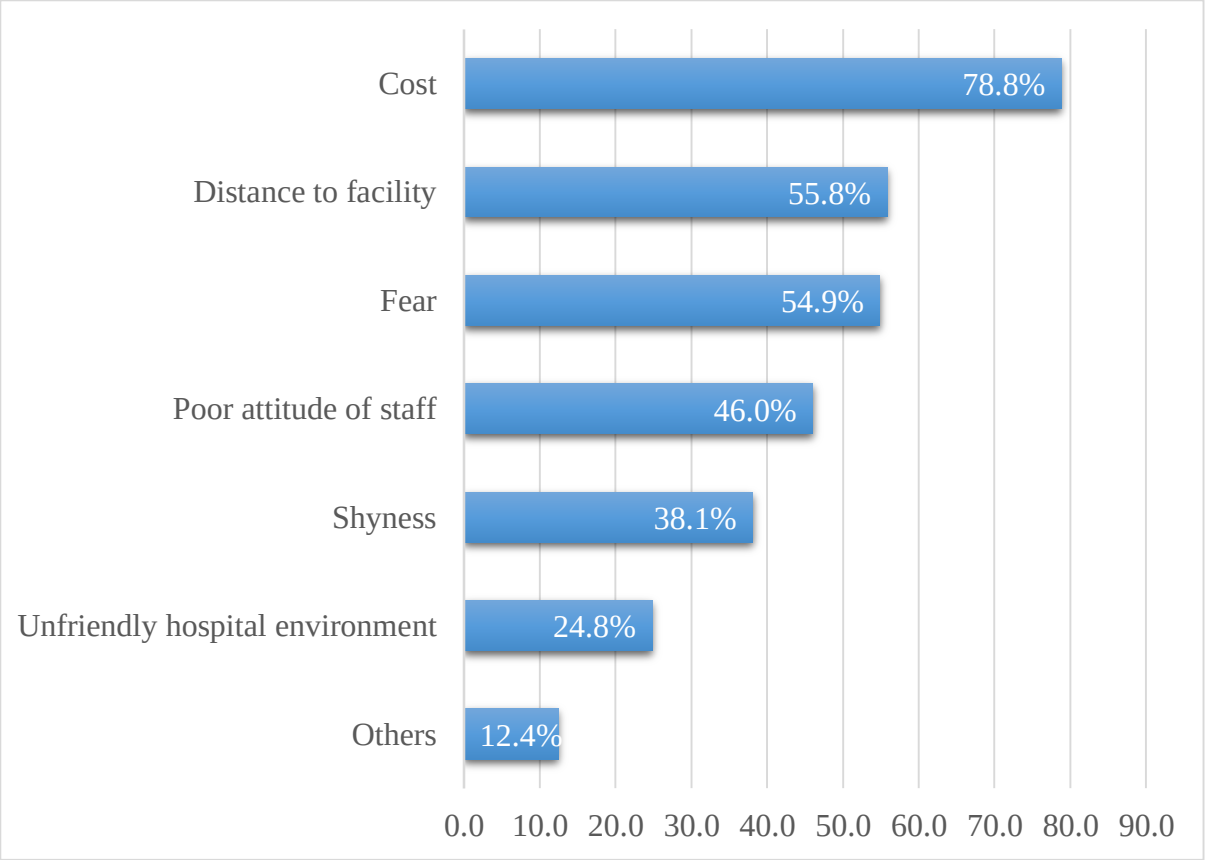

Figure 4.5: Patient perspective of barriers to dental service utilisation

4.7 Associations between the independent variables and utilization of dental services

4.7.1 Socio-demographic factors associated with dental service utilization

The results of the simple logistic regression conducted to determine associations between each socio-demographic characteristic and utilization of dental services is shown below in Table 4.2. The socio-demographic characteristics that showed significant association with utilization of dental services included; educational level and religion.

Respondents who had obtained tertiary level education had significantly 5.56 times the odds of utilizing dental services as compared to respondents who had no level of education (cOR = 5.56; 95% CI = 1.08 – 28.63).

Also, respondents who were Muslims had significantly 5.27 times the odds of utilizing dental services as compared to respondents who were Christians (cOR = 5.27; 95% CI = 1.17 – 23.61).

Table 4.2: Socio-demographic factors associated with dental service utilization

Variables	Utilization Of Dental Services		cOR (95% CI)	p-values
	Adequate utilization (≥ 2 dental visits/yr) (n = 31)	Inadequate utilization (≤ 1 dental visit/yr) (n = 82)		
Mean Age	51.2 ± 18.9	50.9 ± 18.2	1.00 (0.97 – 1.02)	0.936
Sex				
Male(Ref)	9(25.0)	27(75.0)	1.00	
Female	55(71.4)	22(28.6)	1.20 (0.49 – 2.96)	0.692
Marital Status				
Never Married(Ref)	6(30.0)	14(70.0)	1.00	
Married	12(25.5)	35(74.5)	0.80 (0.25 – 2.55)	0.706
Living Together	2(40.0)	3(60.0)	1.56 (0.20 – 11.83)	0.669
Divorced	4(26.7)	11(73.3)	0.85 (0.19 – 3.77)	0.829
Widowed	7(26.9)	19(73.1)	0.86 (0.24 – 3.12)	0.818
Employment Status				
Unemployed(Ref)	8(26.7)	22(73.3)	1.00	
Self Employed	13(28.3)	33(71.7)	1.08 (0.39 – 3.04)	0.879
Public Sector	5(25.0)	15(75.0)	0.92 (0.25 – 3.35)	0.895
Private Sector	0(0.0)	5(100.0)	1	
Student	5(41.7)	7(58.3)	1.96 (0.48 – 7.99)	0.346
Educational Level				
No Education(Ref)	6(37.5)	10(62.5)	1.00	
Primary	5(21.7)	18(78.3)	0.46 (0.11 – 1.91)	0.287
Junior High School	8(18.2)	36(81.8)	0.37 (0.10 – 1.32)	0.125
Senior High School	2(11.8)	15(88.2)	0.22 (0.04 – 1.33)	0.099
Tertiary	10(76.9)	3(23.1)	**5.56 (1.08 – 28.63)**	**0.040**
Religion				
Christian(Ref)	25(24.0)	79(76.0)	1.00	
Muslim	5(62.5)	3(37.5)	**5.27 (1.17 – 23.61)**	**0.030**
Traditionalist	1(100.0)	0(0.0)	1	
Mean Income	807.2 ± 465.7	750.8 ± 410.4	1.00 (0.99 – 1.002)	0.623

4.7.2 Association between conditions presented and utilization of dental services

The results from a Chi Square test of association is shown below in Table 4.3. Most conditional factors did not show any significant association with utilization of dental facilities. These factors that showed no significant association with utilization of dental facilities included; bad breath, broken teeth, toothache, painful swelling, missing teeth, mouth sore and painless swelling. However, gum disease showed significant association with utilization of dental services ($p = 0.045$).

Table 4.3: Association between conditions presented and utilization of dental services

Variables	Utilization		p-value
	Adequate utilization(≥ 2 dental visits/yr)	Inadequate utilization(≤ 1 dental visit/yr)	
Bad breath			+0.721
Bad breath	3(5.7)	50(94.3)	
No bad breath	5(8.3)	55(91.7)	
Broken teeth			+1.000
Broken teeth	5(7.6)	61(92.4)	
No broken teeth	3(6.4)	44(93.6)	
Gum disease			+0.045
Gum disease	4(4.4)	87(95.6)	
No gum disease	4(18.2)	18(81.8)	
Toothache			+0.598
Toothache	8(8.3)	89(91.7)	
No toothache	0(0.0)	16(100.0)	
Painful swelling			+0.717
Painful swelling	4(8.5)	43(91.5)	
No Painful swelling	4(6.1)	62(93.9)	
Missing teeth			+1.000
Missing teeth	1(5.3)	18(94.7)	
No missing teeth	7(7.5)	87(92.5)	
Mouth sore			+0.407
Mouth sore	3(10.7)	25(89.3)	
No mouth sore	5(5.9)	80(94.1)	
Painless swelling			+1.000
Painless swelling	0(0.0)	3(100.0)	
No painless swelling	8(7.3)	102(92.7)	

***statistically significant (p<0.05)** **+ Fisher's exact**

4.7.3 Association between type of treatment and dental service utilization

The results from a Chi Square test of association is shown below in Table 4.4. The type of treatment received did not show any statistical significance with utilization of dental services.

Table 4.4: Association between type of treatment and dental service utilization

Variables	Utilization		p-value
	Adequate utilization (≥ 2 dental Visits)	Inadequate utilization (≤ 1 dental Visit/yr)	
Cleaning			+0.709
Cleaning	6(8.3)	66(91.7)	
No cleaning	2(4.9)	39(95.1)	
Dentures			+0.287
Dentures	2(13.3)	13(86.7)	
No dentures	6(6.1)	92(93.9)	
Extraction			+1.000
Extraction	7(7.4)	88(92.6)	
No extraction	1(5.6)	17(94.4)	
Filling			+1.000
Filling	4(7.4)	50(92.6)	
No filling	4(6.8)	55(93.2)	
Medication			+0.593
Medication	8(8.0)	92(92.0)	
No medication	0(0.0)	13(100.0)	

Enablers and Barriers of dental service utilization

For this study, enablers and barriers were addressed using accessibility, affordability, environmental, need and knowledge factors. They could be enablers or barriers depending on whether they enhanced utilization or not.

4.7.4 Accessibility factors associated with dental service utilization

As shown in Table 4.5, a minute increase in time spent to arrive at the facility significantly reduces the odds of utilizing dental services by 61% (cOR = 0.39; 95% CI = 0.18 – 0.87).

Respondents who knew about the existence of dental facilities had significantly 9.38 times the odds of utilizing dental services two or more times compared to those who did not know about the existence of dental facilities (cOR = 9.38; 95% CI = 3.67 – 23.97). (See Table 4.5)

Table 4.5 Accessibility factors associated with dental service utilization

Variables	Utilization Of Dental Services		cOR (95% CI)	p-value
	Adequate utilization (n = 31)	Inadequate utilization (n = 82)		
Distance of facility from home				
Not Far(Ref)	3(23.1)	10(76.9)	1.00	
Far	26(27.1)	70(69.7)	1.24 (0.32 – 4.86)	0.759
Very Far	2(50.0)	2(50.0)	3.33 (0.32 – 34.83)	0.315
Time Of Travel To Facility (In Minutes)	1.09 ± 0.67	1.36 ± 0.46	**0.39 (0.18 – 0.87)**	**0.021**
Means Of Transport				
Walk(Ref)	12(29.3)	29(70.7)	1.00	
Public Transport	18(25.7)	52(74.3)	0.84 (0.35 – 1.98)	0.684
Private Transport	1(50.0)	1(50.0)	2.42 (0.14 – 41.87)	0.544
Prior Knowledge On Existence Of Dental Facility				
No prior knowledge(Ref)	10(13.0)	67(87.0)	1.00	
Have prior knowledge	21(58.3)	15(41.7)	**9.38 (3.67 – 23.97)**	**0.000**

4.7.5 Affordability factors associated with dental service utilization

Table 4.6 shows the associations between each affordability factor and utilization of dental facilities. A GH¢1 increase in the amount paid out of pocket for dental services significantly reduces the odds of utilization of dental services by 3% (cOR = 0.97; 95% CI = 0.95 – 0.98).

Furthermore, a simple t-test conducted to test significant difference in amount paid out of pocket by those on NHIS and privately insured revealed no significant difference in amount paid out of pocket. Those on NHIS paid an average of 211.42 Ghana Cedis out-of-pocket and those who were privately insured paid an average of 264.15 Ghana Cedis out-of-pocket. (Mean difference= -52.7, 95% CI= -144.91 39.469, p>0.05). (See Table 4.6)

Table 4.6 Affordability factors associated with dental service utilization

Variables	Utilization Of Dental Services		cOR (95% CI)	p-value
	Adequate utilization (n = 31)	Inadequate utilization (n = 82)		
Ability to pay for dental services				
Able to pay for dental services (ref)	9(34.6)	17(65.4)	1.00	
Not able to pay for dental services	22(25.3)	65(74.7)	0.64 (0.25 – 1.64)	0.352
Mode of payment for dental services				
NHIS(ref)	4(57.1)	3(42.9)	1.00	
Private Insurance	27(25.5)	79(74.5)	0.26 (0.05 – 1.22)	0.087
Amount paid out-of-pocket for dental services	122.3 ± 17.9	246.6 ± 113.9	**0.97 (0.95 – 0.98)**	**0.000**
Amount paid for health insurance	20.0 ± 5.9	18.5 ± 6.9	1.04 (0.97 – 1.11)	0.309

4.7.6 Environmental factors associated with dental service utilization

The environmental factors did not show any **statistically** significant association with utilization of dental services as shown below in Table 4.7.

Table 4.7 Environmental factors associated with dental service utilization

Variables	Utilization Of Dental Services		cOR (95% CI)	p-value
S	Adequate utilization (n = 31)	Inadequate utilization (n = 82)		
Cleanliness of clinic				
Clean(ref)	5(27.8)	13(72.2)	1.00	
Not clean	26(27.4)	69(72.6)	0.98 (0.32 – 3.01)	0.972
Noisiness of clinic				
Noisy (ref)	25(27.5)	66(72.5)	1.00	
Not noisy	6(27.3)	16(72.7)	0.99 (0.35 – 2.82)	0.985
Attractiveness of clinic				
Attractive (ref)	7(33.3)	14(66.7)	1.00	
Not attractive	24(26.1)	68(73.9)	0.71 (0.25 – 1.96)	0.503
Communication skills of staff				
Good communication skills(ref)	30(27.8)	78(72.2)	1.00	
Bad communication skills	1(20.0)	4(80.0)	0.65 (0.07 – 6.05)	0.705
Doctorial skills				
Good doctorial skills (ref)	30(27.3)	80(72.7)	1.00	
Bad skills	1(33.3)	2(66.7)	1.33 (0.12 – 15.25)	0.817
Explanation of procedures				
Procedures explained(ref)	27(27.0)	73(73.0)	1.00	
Procedures not explained	4(30.8)	9(69.2)	1.20 (0.34 – 4.23)	0.775
Perception of quality of care				
good(ref)	28(28.0)	72(72.0)	1.00	
Poor	0(0.0)	2(100.0)	1	
Fair	3(27.3)	8(72.7)	0.96 (0.24 – 3.89)	0.959
Post-op problems after dental procedure				
Post op -complication(ref)	4(20.0)	16(80.0)	1.00	
No post- op complication	27(29.0)	66(71.0)	1.64 (0.50 – 5.34)	0.415
Recommend dental facility				
Likely to recommend	31(29.0)	76(71.0)	1	
Not likely to recommend	0(0.0)	6(100.0)	1	

4.7.7 Need factors associated with dental service utilization

The odds of adequate dental service utilization was reduced by 58% among respondents who did not visit dental services by themselves compared to those who indicated that they visited the dental facilities by themselves (cOR = 0.42; 95% CI = 0.18 – 0.99) (See Table 4.8).

Table 4.8 Need factors associated with Dental Service Utilization

Variables	Utilization Of Dental Services		cOR (95% CI)	p-value
	Adequate utilization (n = 31)	Inadequate utilization (n = 82)		
Personal decision to visit dental facility				
Personally decided(ref)	14(40.0)	21(60.0)	1.00	
Did not decide personally	61(78.2)	17(21.8)	**0.42 (0.18 – 0.99)**	**0.048**
If no, who informed decision				
Relatives(Ref)	3(30.0)	7(70.0)	1.00	
Friends	7(25.0)	21(75.0)	0.78 (0.16 – 3.85)	0.758
Others	21(28.0)	54(72.0)	0.91 (0.21 – 3.84)	0.895
Duration of dental condition				
Less Than 3 Weeks(Ref)	4(36.4)	7(63.6)	1.00	
More Than 3 Weeks	27(26.5)	75(73.5)	0.63 (0.17 – 2.32)	0.488
Fear of pain during dental treatment				
Fear of pain(ref)	16(23.5)	52(76.5)	1.00	
No fear of pain	15(33.3)	30(66.7)	1.63 (0.70 – 3.74)	0.255
Fear of bleeding during dental treatment				
Fear of bleeding(ref)	16(27.1)	43(72.9)	1.00	
No fear of bleeding	15(27.8)	39(72.2)	1.03 (0.45 – 2.36)	0.937
Cultural means to manage dental condition				
Use cultural mean(ref)	12(27.3)	32(72.7)	1.00	
Do not use cultural means	19(27.5)	50(72.5)	1.01 (0.43 – 2.37)	0.976

4.7.8 Knowledge factors associated with dental service utilization

Table 4.9 shows the associations between each knowledge factor and utilization of dental facilities. However, all these factors did not show any significant association with the utilization of dental services.

Table 4.9 Knowledge factors associated with dental service utilization

Variables	Utilization Of Dental Services		cOR (95% CI)	p-value
	Adequate utilization (n = 31)	Inadequate utilization (n = 82)		
Knowledge on expected number of visits				
Every 6 Months(Ref)	14(25.5)	41(74.5)	1.00	
Annually	3(30.0)	7(70.0)	1.26 (0.29 – 5.52)	0.764
Once In A Lifetime	4(33.3)	8(66.7)	1.46 (0.38 – 5.61)	0.578
Others	10(27.8)	26(72.2)	1.13 (0.44 – 2.91)	0.806
Visit to other dental facilities within the past year				
Visited(ref)	8(20.5)	31(79.5)	1.00	
Did not visit	23(31.1)	51(68.9)	1.75 (0.69 – 4.39)	0.234

4.8 Association between significant variables from bivariate analysis and dental service utilization.

After adjusting for all variables in the simple logistic regression with $p < 0.05$, Table 4.10 shows the adjusted odds ratio of all the variables adjusted for in the multiple logistic regression. (See Table 4.10)

Respondents who had obtained tertiary level education had significantly 5.56 times the odds of utilizing dental services as compared to respondents who had no level of education (cOR = 5.56;

95% CI = 1.08 – 28.63). However, after adjusting for other variables this association was found not to be significant (aOR = 0.94; 95% CI = 0.09 – 9.16).

Also, respondents who were Muslims had significantly 5.27 times the odds of utilizing dental services as compared to respondents who were Christians (cOR = 5.27; 95% CI = 1.17 – 23.61). This association was found not to be significant after adjusting for other variables (aOR = 2.41; 95% CI = 0.21 – 27.15).

A minute increase in time spent to arrive at the facility significantly reduces the odds of utilizing dental services by 61% (cOR = 0.39; 95% CI = 0.18 – 0.87). This association was not significant after adjusting for other variables (aOR = 0.78; 95% CI = 0.24 – 2.58)

Respondents who knew about the existence of dental facilities had significantly 9.38 times the odds of utilizing dental services two or more times compared to those who did not know about the existence of dental facilities (cOR = 9.38; 95% CI = 3.67 – 23.97). However, this association was statistically significant after adjusting for other variables (aOR = 9.94; 95% CI = 2.11 – 46.64).

A GH¢1 increase in the amount paid out of pocket for dental services significantly reduces the odds of utilization of dental services by 3% (cOR = 0.97; 95% CI = 0.95 – 0.98). This association was still significant after adjusting for other variables (aOR = 0.97; 95% CI = 0.95 – 0.98).

The odds of adequate dental service utilization was reduced by 58% among respondents who did not visit dental services by themselves compared to those who indicated that they visited the dental facilities by themselves (cOR = 0.42; 95% CI = 0.18 – 0.99). This association was found not to be significant after adjusting for other variables (aOR = 0.81; 95% CI = 0.16 – 4.00).

Table 4.10 Results for multiple logistic regression with significant variables from bivariate analysis

Variables	cOR (95% CI)	p-value	aOR (95% CI)	p-value
Educational Level				
No Education (Ref)	1.00			
Primary	0.46 (0.11 – 1.91)	0.287	0.11 (0.01 – 1.04)	0.054
Junior High School	0.37 (0.10 – 1.32)	0.125	0.21 (0.02 – 1.97)	0.171
Senior High School	0.22 (0.04 – 1.33)	0.099	0.09 (0.005 – 1.47)	0.090
Tertiary	**5.56 (1.08 – 28.63)**	**0.040**	0.94 (0.09 – 9.16)	0.959
Religion				
Christian(Ref)	1.00			
Muslim	**5.27 (1.17 – 23.61)**	**0.030**	2.41 (0.21 – 27.15)	0.477
Traditionalist	1		1	
Time of travel to facility (in minutes)	**0.39 (0.18 – 0.87)**	**0.021**	0.78 (0.24 – 2.58)	0.685
Prior knowledge on existence of dental facility				
Did not have prior knowledge (Ref)	1.00			
Had prior knowledge	**9.38 (3.67 – 23.97)**	**0.000**	**9.94 (2.11 – 46.64)**	**0.004**
Amount paid out-of-pocket for dental services	**0.97 (0.95 – 0.98)**	**0.000**	**0.97 (0.95 – 0.98)**	**0.000**
Personal decision to visit dental facility				
Decided personally(ref)	1.00			
Did not decide personally	**0.42 (0.18 – 0.99)**	**0.048**	0.81 (0.16 – 4.00)	0.796

4.9 Summary of findings

Twenty seven percent (31/113) of respondents adequately utilized dental services with a minimum of 2 visits (p = 27.4%, 95% CI = 19.5 – 36.6%). Majority of respondents utilized dental services due to chronic dental conditions 71.7% (81/113). Majority of respondents 78.8% (89/113) cited cost as a reason for inadequately utilizing dental services,

The socio-demographic characteristics that showed significant association with utilization of dental services include; educational level and religion. Respondents who had obtained tertiary level education had significantly 5.56 times the odds of utilizing dental services as compared to respondents who had no level of education (cOR = 5.56; 95% CI = 1.08 – 28.63).
However, after adjusting for Religion, Time of travel to facility (in minutes) , Prior knowledge on existence of dental facility, Amount paid out-of-pocket for dental services, Personal decision to visit dental facility, this association was found not to be significant (aOR = 0.94; 95% CI = 0.09 – 9.16).
Also, respondents who were Muslims had significantly 5.27 times the odds of utilizing dental services as compared to respondents who were Christians (cOR = 5.27; 95% CI = 1.17 – 23.61). This association was found not to be significant after adjusting for Educational Level, Time of travel to facility (in minutes) , Prior knowledge on existence of dental facility, Amount paid out-of-pocket for dental services, Personal decision to visit dental facility (aOR = 2.41; 95% CI = 0.21 – 27.15).
The environmental factors did not show any significant association with utilization of dental services.

Need factor (individual's personal decision to visit dental facility):The odds of adequate dental service utilization was reduced by 58% among respondents who did not visit dental services by themselves compared to those who indicated that they visited the dental facilities by themselves (cOR = 0.42; 95% CI = 0.18 – 0.99). This association was found not to be significant after adjusting for Educational Level, Religion, Time of travel to facility (in minutes) , Prior knowledge on existence of dental facility, Amount paid out-of-pocket for dental services, (aOR = 0.81; 95% CI = 0.16 – 4.00).

Knowledge factors did not show any significant association with the utilization of dental services.

Accessibility factor associated with Utilization of Dental Services was time spent travelling to the dental facility. A minute increase in time spent to arrive at the facility significantly reduces the odds of utilizing dental services by 61% (cOR = 0.39; 95% CI = 0.18 – 0.87). This association was not significant after adjusting for Educational Level, Religion, Prior knowledge on existence of dental facility, Amount paid out-of-pocket for dental services, Personal decision to visit dental facility (aOR = 0.78; 95% CI = 0.24 – 2.58)

Respondents who knew about the existence of dental facilities had significantly 9.38 times the odds of utilizing dental services two or more times compared to those who did not know about the existence of dental facilities (cOR = 9.38; 95% CI = 3.67 – 23.97). However, this association proved to be significant after adjusting for Educational Level, Religion, Time of travel to facility (in minutes), Amount paid out-of-pocket for dental services, Personal decision to visit dental facility (aOR = 9.94; 95% CI = 2.11 – 46.64).

A GH¢1 increase in the amount paid out of pocket for dental services significantly reduces the odds of utilization of dental services by 3% (cOR = 0.97; 95% CI = 0.95 – 0.98). This association was still significant after adjusting for Educational Level, Religion, Time of travel to facility (in minutes) , Prior knowledge on existence of dental facility, and Personal decision to visit dental facility (aOR = 0.97; 95% CI = 0.95 – 0.98).

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This chapter presents the discussion of the findings of the empirical study and compares these findings with existing literature. There are 5 sections under this chapter. Section one presents on Utilization of dental services. Socio-demographic factors associated with utilization of dental services have been discussed in section two. Section three focuses on Accessibility factors associated with utilization of dental services. Discussion of Environmental factors associated with utilization of dental services have been reported in section four and Need factors associated with utilization of dental services including Knowledge factors have been discussed in section five.

5.1 Utilization of dental services

In this study, twenty seven percent of respondents adequately utilized dental services with a minimum of 2 visits in a year. This proportion of respondents who utilize dental services is quite low indicating poor utilization at the Hawa Hospital. A higher percentage has been recorded in a national study in US, thus, 41-50% of the populace utilize dental service. In the US, the proportion was even described as low because experts recommend regular visitation (Nasseh et al, 2015). In Madagascar, 83% of 12 year olds had never received dental care (Josefczyk, 2015).

Many countries in Africa, Asia and Latin-America have a shortage of oral health personnel and by and large the capacity of the systems is limited to pain relief or emergency care. In Africa, the dentist to population ratio is approximately 1:150000 against about 1:2000 in most industrialized countries. (https://www.who.int/oral_health/action/services/en/retrieved, May, 2019). A plausible

reason for low dental service utilization in Africa and Ghana for that matter, as dentist to population ration is relatively lower.

A research conducted by Vignesh and Priyadarshni in India revealed that, 31.58% of the investigated patients considered gum bleeding a normal phenomenon, therefore did not recognize the need to report such condition to the dentist (Vignesh et al, 2012). Such a phenomenon may be a plausible reason for low utilization of dental services at the Hawa Hospital in the East Akim Municipality of Ghana.

In India, about 25,000 dentists graduate annually from the over 289 existing dental institutions (Ambika et al, 2015). Despite the large working class, majority of the Indian population suffer from poor access to fundamental dental care. There is an appreciable disparity with regards to the ratio of dentists to population in both rural and urban communities; with 1:10,000 in urban and 1:150,000 in rural setting. Notwithstanding the equity gap in access, patients self-finance dental services rendered to them in both private and public facilities (Ambika et al, 2015). The equity gap with relatively lower rural ratio can also be a plausible reason for the relatively lower service utilization in the rural area, where Hawa is situated.

5.2 Socio-demographic factors associated utilization of dental services

In this study, results of the simple logistic regression conducted to determine associations between each socio-demographic characteristic and utilization of dental services showed significant association between utilization of dental services and some socio-demographic factors. These were educational level and religion.

Respondents who had obtained tertiary level education had significantly 5.56 times the odds of utilizing dental services as compared to respondents who had no level of education. Similar findings have been documented in other studies, in that, high educational level have been observed to promote positive health seeking behavior (Herkrath et al, 2018).

According to Bhushan et al. (2012), those with high educational status were found to better patronize dental service as compared with their counterpart with lower educational level. This could possibly be explained by the fact that the former have enough knowledge and information first, about the existence of dental services and secondly the importance of regular dental visitation. However this finding was not evident in the current study. Partly because it was limited to one facility with limited sample size which in turn affects the ability to obtain reliable results for all variables investigated. Other studies have also documented that low educational status reduces utilization of dental services. Low educational status has been identified as a major contributing factor to dental service under-utilization (Chou et al, 2011). The argument put across by these researchers suggests that, the absence of education can affect an individual's level of understanding of information given and ability to make right decisions concerning their health (Chou et al, 2011). Perhaps patients with low educational status may not recognize the need to access routine dental care. However, after adjusting for other variables, this association was found not to be significant. This could have resulted from sample size being too small or that educational level has no association with utilization of dental in the presence of the variables adjusted for.

Also, Muslims had significantly five times higher odds of utilizing dental services as compared to respondents who were Christians. This finding on the association between utilization of dental services and religion ought to be discussed in context since religions differ across various study settings. Due to contextual variations, research conducted by Poudyal et al. (2010), also showed

differences in level of utilization of dental care among some religious groups in Mangalore. Hindus (59.9%) were the majority, with 34.6% Muslims and the least being Christians (5.5%).

Due to the low percentages of Christians and Muslims, the variable, religion, was sub-divided into Hindus (59.9%) and 40.1% non-Hindus, for easy statistical analysis with significant statistical results. In the Ghanaian context, Christians are the majority and Muslims form the second larger group. In this study, respondents were either Muslim or Christians.

All other socio-demographic characteristics, age, sex, marital status, employment status, and income, did not show any significant association with utilization of dental services at the facility. Meanwhile different studies have shown varying associations between the various demographic factors and utilization of dental services (Herkrath et al, 2018). According to research conducted by Gupta et al (2014), socio-demographic factors that were found to influence utilization among the rural population of Jaipur, India, were occupation, socio-economic status/income level, and age. High occupation and socio-economic status groups (income level) better patronized dental care as against those with low middle-income level, and low social class (Bhushan et al. 2012). Age as a determinant of dental service utilization has also been given much study.

Disparities in service use between the aged and young have been observed in previous studies (Dye et al, 2011). Nearly 100% of the adult populations over the past 5 years had not used dental services as against 11% in those below 35years in an Indian study (Panchbhai, 2012). It was also found in other studies that, most of the elderly did not recognize the dying need for dental health care (Peterson et al, 2010).

This is further evidenced by a Brazilian research conducted by Mullachery et al. (2008), which explained that dental care utilization and frequency of dental services utilization was seen more among the young than the old. The difference in this observation between the two aged groups was statistically significant. Females are generally believed to have better health seeking behaviour than males due to obvious reasons.

They often share their problems; they do not internalize pain as against their counterparts who are more secretive. However, due to the effect of several other confounding factors believed to influence utilization of health services, sex as a determinant of health seeking behaviour does not always show significant association with utilization (Barker et al., 2014).

This could have accounted for the lack of significant association between sex and utilization in this study. The sample size could also be a contributing factor. Perhaps if an inter-facility study was done to get more numbers for the sample size, such socio demographic characteristics may show associations with utilization of dental services.

In a research conducted by Poudyal et al. (2010), in Mangalore, there was no significant difference between the dental visit history among males and females. This finding was however different from that of Lukacs (2010) and Manski et al, (2012) where females utilized dental services more. Marital status, although insignificant in this study, could influence health care seeking behaviour (Chaibva, 2008).

It has been documented that unmarried clients have higher chance of underutilizing health care due to lack of spousal support (Chaibva, 2008). In other literature, it has also been observed that married patients may be deficient in their ability to make own informed decisions regarding their health (Lindstrom, 2009).

Thus the power to make health decisions relies more often than not, solely on their spouse and other powerful family members (Okunseri et al, 2009). Meaning that, the effect of marital status on health seeking behaviour is contextual, with some of the cases, experiencing positive association with utilization of health service whiles others show negative association or no associations at all.

5.3 Accessibility factors associated with utilization of dental services

In this study, a minute increase in time spent to arrive at the facility significantly reduces the odds of utilizing dental services. This finding suggests the effect of long distance from home to facility on utilization and it is consistent with a report that, distance from home is a barrier to dental service utilization (Jain et al., 2013). In rural and hard to reach areas where health care is far away from most homes, clients often report geographic inaccessibility as a major obstacle to health care. They would have to travel a very long distance before accessing health care. This however often discourages them, making them resort to alternative medical care, which is often closer to them. However this was not significant after adjusting for other variables. Thus the association turned out to be insignificant.

Respondents, in this study, who were aware of the existence of dental services at the facility had significantly nearly ten times the odds of utilizing dental services (two or more times in a year) compared to those who did not know about the existence of dental services in the facility. This association proved to be significant after adjusting for other variables. The implication of this finding is that, there should be awareness creation on the availability of dental services. It is only natural for individuals not to patronize a service they unaware of. This is however consistent with research findings of Gavett, 2015 in US.

5.4 Affordability factors associated with utilization of dental services

A GH¢1 increase in the amount paid out of pocket for dental services significantly reduces the odds of utilization of dental services by 3%. This association was still significant after adjusting for other variables. Also, amount paid for insurance (whether private or NHIS) did not significantly predict utilization.

Further analysis (t-test), revealed that there was no significant difference in the amount paid out of pocket by respondents who were on NHIS and those who were privately insured. This finding suggests that perhaps many of the services rendered at the dental facility were not covered by insurance or perhaps what is covered by NHIS did not differ from services covered by Private insurance.

Hence cost, in general for the patronage of dental services at the Hawa Hospital, is a significant barrier to utilization. Majority of respondents in this study cited cost as the commonest reason for inadequately utilizing dental services.

High cost and lack of access were revealed as fundamental barriers to dental service utilization among the elderly (Peterson et al, 2010). The cost element indeed captures financial accessibility as a very important determinant for health service utilization (Ramraj et al, 2013). The issue of dental service polarization, describing dentistry as a quality service associated with higher cost, also worsened disparities in the distribution of dental care. This cost often serves as a barrier to service utilization, especially among the geriatric group (Locker et al, 2011)

Additionally, the above issues of cost cannot be discussed in isolation from the political and economic structural context of the community. It has to be treated in unison not forgetting the fundamental components of healthy living (Gavett, 2015).

5.5 Environmental factors associated with utilization of dental services

The association between environmental factors and dental service utilization was not significant in the current study. This finding does not agree with other studies (Adebayo et al, 2014).

Results from some studies revealed that the location and design of the dental clinic could be a basis for attracting clients to further patronize the dental facilities they visited (Guay, 2004). Well-equipped dental facilities with appropriate dental chairs and equipment made service provision holistic in meeting the clients need hence encouraged them to patronize dental services timely as scheduled by their dentist.

These studies further indicated that the urban communities tend to have more furnished equipment and clinics than those in the rural areas. The provision of services, in terms of quality, in the urban facilities were very high comparatively, to that of the rural areas (Adebayo et al, 2014). This, no show of association could mean that participant's decision to utilize dental services did not bother on the hospital environment of Hawa Hospital. On the other hand, there could be an association between environment and utilization which could have been detected if the sample size used was relatively larger.

5.6 Need factors associated with Utilization of Dental Services

With regards to the needs factors (Personal decision to visit dental facility, Duration of dental condition, fear of pain during dental treatment, fear of bleeding during dental treatment, and cultural means to manage dental condition) measured in this study, none of them showed significant association with dental services utilization in the multivariate analysis.

However, Personal decision to visit dental facility was significant in the bivariate analysis. The odds of adequate dental service utilization was reduced by 58% among respondents who did not visit dental services by their own decision compared to those who indicated that they visited the dental facilities by their own volition.

These findings of lack of statistically significant association differs from literature that have stated associations between such factors and dental utilization. Although the variable 'Cultural means to manage dental condition' did not show statistically significant association with utilization, Some researchers argue that any programme must take into consideration socio-cultural context of the population as cultural practices and traditional beliefs could be a negative factor contributing to services utilization (Butani, 2008).

Some individuals often use herbal preparations for cure, and when complications such as dental abscess and cerebral abscess set in, they would then rush in to the hospital. All these could be better appreciated, when health is studied under one's socio-cultural context. According to Butani et al (2008), many cultural groups lack strong preventive orientation in relation to oral health. Perhaps at the Hawa Hospital patients simply did visit dental unit for other reasons rather than the use of cultural means to manage their dental challenges. Thus most of the dental patients did not resort to cultural means in managing their dental conditions.

5.6.1 Knowledge factors associated with utilization of dental services

Knowledge factors (Knowledge of expected number of visits, visit to other dental facilities within the past year) did not show any significant association with the utilization of dental services. However, literature from other studies have documented that people with adequate knowledge often patronize dental service as compared to those who have little or no knowledge of the

existence of dental services and even if they do, still have little or no knowledge of its availability in their catchment area as well as the benefits associated with regular dental visitations (Herkrath et al., 2018).

A similar assertion was made in another study (Survashe et al, 2018). They stated that recognizing the benefits of routine dental visits often precipitated the need to regularly visit a dentist (Survashe et al, 2018).

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.0. Introduction

This chapter presents the summary based on the general objective, conclusions based on the specific objectives, contribution to knowledge and recommendations arising out of the findings, limitation to the entire study and suggestions for future research. There are 5 sections under this chapter. Section one presents the summary of the study. Section two presents the conclusions of the study. Section three presents the contribution of the study to knowledge. Section four presents the recommendations of the study. Limitations to the study are presented in section five. Section six presents the future research.

6.1. Summary of the study

This section presents the summary of findings in the study based on the general objective. The general objective of the study was to assess barriers and enablers to utilization of dental services at Hawa Memorial Saviour Hospital, Osiem, East Akim Municipality-Eastern Region of Ghana. A quantitative research method was applied where 113 patients who were attending dental unit in the hospital responded to a structured questionnaire. Generally, the findings of the study showed that dental service utilisation (2 or more per year) was low, revealing also that, amount paid out of pocket was associated with significant reduction in utilization.

Cost was stated as the commonest reason for not utilizing dental services at the hospital by respondents. Prior knowledge of existence of the dental facility at the Hawa hospital significantly predicted utilization.

6.2. Conclusions of the Study

This section presents the conclusions of the study based on the specific objectives, which were: to determine the proportion of patients who adequately utilize dental services; to determine enabling factors influencing utilisation of dental services among; to determine barriers to the utilization of dental services at the Hawa Memorial Saviour Hospital. The following discussed conclusions have been set around these objectives accordingly.

6.2.1. Proportion of patients utilizing dental services

The study found and concludes that, proportion of dental service utilization is lowat Hawa Memorial Saviour Hospital. This finding agrees with that of Vignesh et al, (2012) and Ambika et al, (2015), but differs from that Nasseh et al, (2015) which concluded higher dental service utilization.

6.2.2. Socio-demographic characteristics (Predisposing factors)

The study concluding on the basis of the Predisposing factors (socio-demographic characteristics) showed that age, level of education, , marital status, occupation, , religion, and income were not significantly associated with dental service utilisation. These findings differ from earlier studies that have shown associations (Chou et al, 2011; Poudyal et al, 2010). Studies have shown varying associations between the various demographic factors and utilization of dental service (Herkrath et al, 2018; Bhushan et al. 2012).

6.2.2. Enabling factors

The study found and concludes that, factors on Availability, Staff attitude, and Environment did not significantly predict dental services utilization. This conclusion has some similarities with earlier findings (Kanyi et al, 2010; Kikwilu et al, 2008). The study also found and concludes that factors that touched on Affordability, Accessibility significantly predicted dental services utilization. Respondents who had prior knowledge of the existence of dental facilities had significantly higher odds of utilizing dental services two or more times compared to those who did not know about the existence of dental facilities. Awareness of the existence is an enabler of adequate utilization.

6.2.3. Barriers to dental service utilization

This study also concludes that, increase in cost is a fundamental barrier to dental service utilization. A GH¢1 increase in the amount paid out of pocket for dental services, significantly reduces the odds of utilization of dental services. Others studies also documented cost as barriers (Jain et al, 2013; Bommireddy et al, 2016)

6.3. Contributions to Knowledge

This section presents the study contribution to knowledge in respect of policy, practice and management of healthcare institutions and research methodology.

6.3.1. Contributions to policy, practice and management of healthcare institutions

The study makes a significant contribution to policy, practice and management of healthcare institutions, especially the private not for profit health facilities in Ghana and elsewhere. It would be recalled that World Health Organisation (2010), has put in place different policies that are focused on oral health care and its utilization in the world. However, it should be noted that the implementation of such policies are usually affected by some context specific factors, including those found in this study. Even as health policy makers in Ghana are making strategic efforts to ensure improved health, there are equally some challenges that private healthcare institutions, especially the not-for-profit ones face.

6.3.2. Contributions to research methodology

The study makes some contribution to methodology since there are some strengths therein. This study is the first on dental service utilization conducted in the Hawa Memorial Saviour Hospital. The study used a facility-based cross-sectional design to collect empirical data for analysis.

The target population consisted of Patients aged 18years and above assessing dental services at Hawa Memorial Saviour Hospital. The administered questionnaire enabled the successful collection of data on potential confounders, which were accounted for in the analysis. The application of the quantitative method enabled the researcher to quantify the results of the study. This would not have been possible if the qualitative method had been applied. Bryan (2012) reported that larger sample sizes make conclusions from quantitative research more generalizable. Statistical methods applied in the analysis make them reliable (Rahman, 2017). The findings in this study can be compared with other quantitative findings because of the systematic, standardized nature of quantitative outcomes.

6.4. Recommendations of the study

This section presents the recommendations of the study for consideration by policy makers, healthcare practitioners and management teams of healthcare institutions. That is to show that the study makes some recommendations based on the findings for consideration by health policy makers, management of healthcare institutions and other stakeholders in the healthcare environment.

1. The management and staff at the Hawa Memorial Saviour Hospital should create awarenessof existence dental services at the Hawa Hospital by way of community outreach and screening programmes.
2. Health professionals at the Hawa Memorial Saviour Hospital must educate their customers on the need to utilize dental services more regularly.
3. The management of Hawa Memorial Saviour Hospital should take steps on having a policy that considers holistic dental care as part of primary health care covered by the National Health Insurance or other private insurance.

6.5. Limitations to the study

This section presents the study's limitations. Thus, the study encountered some limitations, which have to be brought to the fore so as to enable future researchers to see how they could address them. Associations found in this study could not be deemed to be causal since the study was cross-sectional. The number of dental care visits was measured by self-reporting.It is well documented that self-reporting is liable to response bias (Van de Mortel, 2008). Due to a small sample size, some variables that would have shown associations may not have shown associations with dental

service utilisation. Conducting this study at the HMSH has limited the conclusions to just the facility. Such incidences are therefore, considered to be limitations to this study.

6.6. Future research

This section presents the areas of research that future studies could look at. That is, based on the limitations to the study, the following areas are suggested for future researchers to consider in their endeavours. Further research could be done in the East Akim Municipal using many facilities with a large sample size. These studies could be done comparing estimates of dental services utilization in both public health and private facilities.

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APPENDICES

SCHOOL OF PUBLIC HEALTH

COLLEGE OF HEALTH SCIENCES

UNIVERSITY OF GHANA

APPENDIX A: Consent Form

Participant

My name is Samuel Adusei. I am a graduate student from the School of Public Health, College of Health Sciences, University of Ghana, undertaking a research on 'Enablers and Barriers to utilization of dental services at Hawa Memorial Saviour Hospital, East Akim Municipality, Eastern region, Ghana.

Purpose of the study

The study seeks to find out the various factors that serve as barriers and enablers to the use of dental services in the chosen facility. Participants are required to share their experiences by responding to questions.

Potential Risks / Benefits

Be assured that the research come at no risk and no cost except the precious time that you will use to fill the questionnaire.

Privacy / confidentiality

Personal information that will make you identifiable will not be included in the questionnaire. The questionnaires that clients will respond to will be anonymous (will not bear names of participants) so you will not be identified. Be assured that your privacy and confidentiality will be respected.

Data storage

You are assured that the information gathered will be kept by the principal investigator and used to assess the facility and any amendment needed to be instituted to help provide better health care.

The data will be stored on devices such as compact disks (CDs) and memory sticks for reference purposes. The data would be discarded after a period of five years.

Voluntary Agreement

Voluntary withdrawal and compensation

You are free to be part of the study and decide to leave at any point you want. No one will be upset if you decide not to partake in the study. You can choose a place of convenience to answer the questions.

Dissemination of results

Results released will be disseminated to all parties involved in a professional manner without exposing certain confidential messages without the consent of the participant.

Participant's Consent

The above document describing the benefits, risks and procedures for the research titled 'Enablers and Barriers to Utilization of Dental Services at Hawa Memorial Saviour Hospital, Osiem- E/R' has been explained to me.

I have read or have had someone read all of the above, asked questions, received answers regarding participation in this study, and am willing to give my consent to participate in this study as a participant.

_____ _____

Date **Name and Signature/Thumbprint of patient**

Statement by Person taking consent

I certify that the nature and purpose in this research have been duly explained to the above individual.

_____ _____

Date **Name and Signature of Person Who Obtained Consent**

Contacts for Additional Information

If you have any further clarification, contact:

Address

Hawa Memorial Saviour Hospital, Box 1. East Akim, Osiem.

Telephone Number: 0245164424.

Email Address: Samuelamponsem1@gmail.com

In case of any concern, you can contact the Ethics Administrator, Ms. Hannah Frimpong, GHS/ERC on 024-599-7061.

APPENDIX B: Questionnaire

TOPIC: ENABLERS AND BARRIERS TO UTILIZATION OF DENTAL SERVICES AT HAWA MEMORIAL SAVIOUR HOSPITAL, EAST AKIM, EASTERN REGION OF GHANA.

Introduction

This research is meant for academic purposes. The aim of the study is to determine the Enablers and Barriers to utilization of dental services among patients assessing dental services in Hawa Memorial Saviour Hospital. You are kindly requested to provide answers to these questions as honestly and precisely as possible. Responses to these questions will be treated as confidential.

Section A	**Predisposing factors (socio-demographic)**	
	Question	**Response**
1	Age of respondent… (As at last birthday)	
2	Sex 1. Male 2. Female	
3	Marital status 1. Never married 2. Married 3. Living together 4. Divorced/ separated 5. Widowed	
4	What is your employment status? 1. Unemployed 2. Self employed 3. Public Sector 4. Private Sector (formal) 5. Student/Apprentice	
5	What is your current level of education? 1. No education	

	2. Primary 3. Middle school/JSS/JHS 4. SSS/SHS/Vocational 5. Tertiary	
6	What is your religious affiliation? 1. Christian 2. Muslim 3. Traditionalist 4. Other specify	
7	What is your monthly income in GH₵?	GH ₵…….

Section B	**Enabling factors**	
	Accessibility	
	Question	**Response**
8	How far is the facility from home? (in kilometres)	……..km
9	How far is the facility from home? (in minutes/hours)	……min/…….hours
10	What means of transport do you use when accessing the dental facility? 1. Walk 2. Public transport 3. Private transport	
11	Were you aware of the existence of this dental clinic? 1. Yes 2. No	

12	What was your source of information on dental care? 1. Friends and Relatives 2. During a visit to health institution 3. Media 4. Others	
Affordability		
13	Are you able to pay for dental services? 1. Yes 2. No 3. Sometimes	
14	By what means do you pay for services? 1. NHIS 2. Private Insurance 3. Out of pocket 4. Insurance and out-of-pocket	
15	How much do you pay out-of-pocket for dental services	GH₵……..
16	What type of services do you pay for out-of pocket? 1. Consultation 2. Diagnosis 3. Surgery 4. Review 5. Post-op 6. Others	
17	How much do you pay for health insurance (Private or NHIS?)	GH₵……
Environment/ Provider factors		
18	Is the dental clinic environment clean? 1. Yes 2. No	
19	Is the environment noisy? 1. Yes 2. No	

20	Is the place attractive for dental visitation? 1. Yes 2. No	
21	Were the staff friendly, humane and with good communication skills? 1. Yes 2. No	
22	In your opinion, did the doctor possess requisite skills to treat you? 1. Yes 2. No	

23	Did the doctor or nurse explain your procedure or condition to you? 1. Yes 2. No	
24	What is your perception of quality of care rendered to you in the clinic? 1. Good 2. Poor 3. Fair	
25	Have you suffered any post-op complication following dental procedure in this facility? 1. Yes 2. No	
26	If yes, what post-op complication was it? 1. Bleeding 2. Pain 3. Swelling 4. Infection 5. Other	
27	Are you likely to recommend the dental facility to anyone? 1. Yes 2. No	
Section C	**Need factors**	

28	Did you decide to visit the dental facility by yourself? 1. Yes 2. No	
29a	If no, who then informed your decision to visit the dental clinic? 1. Relatives 2. Friends 3. Others	
29b	If yes, what condition brought you to the facility? 1. Bad breath 2. Broken teeth 3. Gum disease 4. Toothache 5. Painful swelling 6. Missing teeth 7. Mouth sore 8. Painless swelling	
29c	For how long have you had this condition? 1. less than 3 weeks 2. more than 3 weeks	
30	What type of treatment did you receive 1. Cleaning 2. Dentures 3. Extraction 4. Filling 5. Medication	
31	Do you have any fear of pain during dental treatment? 1. Yes 2. No	
32	Do you have any fear of bleeding from the gum in the process of receiving treatment? 1. Yes 2. No	

33	Do you use any other cultural means other than orthodox to manage your dental conditions? 1. Yes 2. No	
33a	If yes, indicate what cultural means a. Concoctions or herbal preparations b. Don't do anything c. Others	

Section D	**Utilization of dental services**	
34	What is the number of dental visits expected of an individual in a year? 1. Every 6 months 2. Annually 3. Once in your life time 4. Others	
35	What are some of the benefits of routine dental care? Can choose more than one answer 1. Improves oral hygiene 2. Reduces dental caries 3. Prevents dental complications 4. Time wasting	
36	Have you ever visited this facility for dental services in the past year? 1. Yes 2. No	
37	How many times have you visited this dental clinic in the past year?	
38	Have you ever visited other facilities for dental services in the past year or two? 1. Yes 2. No	

39	What factors will **positively influence (enablers)** you to visit a dental facility? 1. Pre-existing/chronic dental condition 2. Clean hospital environment 3. Friendly staff attitude 4. Knowledge and capability of staff 5. Aware of importance of dental hygiene 6. Routine dental check up	
40	What factors will **positively influence (enablers)** you to visit a dental facility? 1. Pre-existing/chronic dental condition 2. Clean hospital environment	

	3. Friendly staff attitude 4. Knowledge and capability of staff 5. Aware of importance of dental hygiene 6. Routine dental check-up 7. Others	
41	What factors will **positively influence (enablers**) you to visit a dental facility? 1. Pre-existing/chronic dental condition 2. Clean hospital environment 3. Friendly staff attitude 4. Knowledge and capability of staff 5. Aware of importance of dental hygiene 6. Routine dental check-up 7. Others	
42	What factors will **negatively influence (barriers)** you not to visit a dental facility? 1. Fear 2. Cost 3. Shyness 4. Distance to facility 5. Poor attitude of staff 6. Unfriendly hospital environment 7. Others	

43	What factors will **negatively influence (barriers)** you not to visit a dental facility? 1. Fear 2. Cost 3. Shyness 4. Distance to facility 5. Poor attitude of staff 6. Unfriendly hospital environment 7. Others	
44	What factors will **negatively influence (barriers)** you not to visit a dental facility? 1. Fear 2. Cost 3. Shyness 4. Distance to facility 5. Poor attitude of staff 6. Unfriendly hospital environment 7. Others	

45	Do you or any household member own any of the following assets? 1 Yes, 2 is No 1. Electricity 1 2 2. Wall clock 1 2 3. Radio 1 2 4. Car 1 2 5. Television 1 2 6. Mobile phone 1 2 7. Land line telephone 1 2 8. Refrigerator 1 2 9. Freezer 1 2 10. Generator/invertor 1 2 11. Washing machine 1 2 12. Computer/tablet 1 2 13. Photo camera 1 2 14. Video deck/dvd/vcd 1 2 15. Sewing machine 1 2 16. Bed 1 2 17. Table 1 2 18. Cabinet/cupboard 1 2 19. Internet access 1 2 20. Motor cycle 1 2	