Journal of
Health, Medicine and Nursing
(JHMN)

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IPRJB
INTERNATIONAL PEER REVIEWED JOURNAL AND BOOK PUBLISHING

Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
Vol.7, Issue 2. No.5, pp 61- 98, 2021

IPRJB
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Journal of Health, Medicine and Nursing
ISSN 2520-4025 (Online)
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Abstract

Purpose: To establish the effect of healthcare provider patient verbal language use on diabetes mellitus management practices in selected hospital in Kenya.

Methodology: This was a causal comparative research study design with application of quantitative and qualitative methodology. The study was carried out at the outpatient diabetic clinics of Kenyatta National Hospital and MP Shah Hospital. 400 patient participants were involved in the study and comprised of 313 patients at Kenyatta National Hospital (KNH) and 87 patients at MP Shah respectively studied between the months of February 2019 and November 2019. A researcher administered questionnaire was used to collect data. The results were summarized using percentages and means or medians for categorical and continuous data respectively. Comparisons were done using chi square test of association of categorical variables and independent t-test for comparison of means. Linear regression and ANOVA were used to test for associations and hypothesis between healthcare provider patient verbal language use (VLU) and diabetes mellitus management practices (DMMPs).

Results: Patients at MP Shah Hospital rated the verbal language use significantly higher than the patients at KNH ($p< 0.001$). However, linear regression analysis showed that verbal language use was not statistically significant overall in Kenya [$\beta=0.04$, (95% CI -0.09, 0.17), $p=0.552$], at KNH [$\beta=0.05$, (95% CI -0.10, 0.19), $p=0.513$] and MP Shah Hospital [$\beta=0.09$, (95% CI -0.21, 0.39), $p=0.552$]; ($P > 0.05$), hence the failure to reject the null hypothesis. Therefore, there was no significant effect of verbal language use by the healthcare provider and the patient on diabetes mellitus management practices in selected hospitals Kenya.

Unique contribution to theory, practice and policy: Verbal language use though important in healthcare provider patient interactions was not responsible for improvement in the diabetes mellitus management practices among the patients. Therefore, verbal language use by the healthcare providers in their communication interaction with patients need to be reinforced in healthcare practice to ensure improved DMMPs. Strategies should be developed to enhance verbal language use through educational curriculum development and implementation at the medical training institutions.

Key words: *Healthcare provider patient communication, Verbal Language Use, Diabetes Mellitus, Management Practices, Patients, Healthcare providers.*

1.0. INTRODUCTION

Clinical communication around diabetes can be especially challenging when language barriers are present, and may contribute to poor diabetes management and outcomes. Communication tends to be one-sided and clinician-centered, with clinicians doing most of the talking, and controlling the conversation by using closed questions and directive speech (Hudelson, Dao, Perron & Bischoff, 2013). Most of their attention is directed towards language discordance and cultural differences, which can lead to biased or false conclusions (Scheppersa, van Dongenb, Dekkerc, Geertzend & Dekkere, 2006). Language barriers can drive a wedge between patients and their doctors (Weir, 2012). Diabetes serves as a prime example of a disease whose clinical outcomes may be influenced by the use of language services given the inherent communication demands in care (Hacker, Choi, Trebino, Hicks, Friedman, Blanchfield & Gazelle, 2012). Language discordance is but one of many obstacles to good communication with patients. Speaking a common language enables, but does not ensure, effective communication. The risks of communication failure are clear when patients and health professionals do not speak the same language (Partida, 2012).

Elements of language enable thoughts and feelings to be conveyed through voice sounds, gestures, or writing. Shared language between patients and health care providers enables gathering information for diagnosis, explaining treatment strategies, and ensuring understanding and joint decision-making. Health care environments have unique cultures and use language in ways unfamiliar to average visitors. Millions of Americans have trouble understanding and acting on health information, even when language is not a barrier (Partida, 2012). Language barriers contribute to miscommunication and inappropriate treatment plans, often resulting in decreased client and provider satisfaction, poorer client understanding of disease, less recall of information, and premature termination of care (Tripp-Reimer, Choi, Kelley & Enslein, 2001).

Diabetes is a growing epidemic that threatens to overwhelm health services and undermine economies, especially in the developing countries. Diabetes mellitus currently affects more than 250 million people worldwide, and is expected to affect over 380 million by 2025. Epidemiological surveys by the Nairobi-based Diabetic Management and Information Center (DMI) gave the estimated prevalence of diabetes mellitus in Kenya at 3% in 2003, and above 6% in 2007. The Centers for Disease Control and Prevention reported that 25.6 million, or 11.3%, of US adults aged 20 or older had diagnosed or undiagnosed diabetes and noted that instituting management programs with better communication between patients and physcians contributed to better adherence to medication and adjustment processes and that more personalised patient-centered interactions help patients and providers set behavioural and clinical goals (Stellefson, Dipnarine & Stopka, 2013). Diabetes Mellitus is a major health issue and is among the most frequent chronic disorders. The growing urbanization, unhealthy lifestyles, and population aging are factors that account for this growing tendency towards diabetes in the population, causing a high economic burden to the government to manage and treat the complications of the disease. The World Health Organization acknowledges that individuals with diabetes must adopt self-care skills to manage their disease, and the better their access to information and knowledge about their condition, the better their communication skills to be competent in their actions that would have a direct effect on the improvement of their quality of life (Torres, Pereira & Alexandre, 2011).

When patients feel belittled verbally, as when a nurse may exercise the power of language, it reinforces a patient's vulnerability and inhibits open communication and cooperation (Larsson, Sahlsten, Segesten & Plos, 2011). Nurses should pay attention to verbal expression and forms of language, in addition to non-verbal messages, because then they can empower patients by opening new and important perspectives for them. The emphasis is on speech formulae that encourage patients to discuss their concerns and to solicit information about the condition (Kettunen, Poskiparta & Liimatainen, 2001).

Particular attention should be given by the caregivers to use technical terms and medical terminology during their contact with the ill, because it is often found that the patients ascribes different interpretations to what they hear or even more cannot understand what is meant exactly, mainly by the therapist, thus increasing mental stress, a fact which makes it more difficult to communicate with the patients. The language of communication should therefore be at the level of the listener, who is not able to assess the providers' scientific knowledge, but has to understand what is discussed (Kourkouta & Papathanasiou, 2014).

Language and functional health literacy may create another barrier to the practice of self-monitoring of blood glucose (SMBG) as was noted in a study that found that patients who could not speak English were much less likely to utilize SMBG as recommended (Karter, 2006). Semi-structured interviews in a Zambian study did show language limitations also affect quality of care because most languages have no equivalent words for some English diabetes and care-related words (Hapunda, Abubakar, van de Vijver & Pouwer, 2015). Healthcare providers should avoid using jargon and medical terminology. If it is necessary to use a medical term, make every effort to explain the word in plain language (Cornett, 2009). Scientific jargon may be too technical or cumbersome to use with most patients. Awareness about patients' comprehension of the language that clinicians use when discussing diabetes prevention is essential for effective communication and may also affect an individual's motivation for lifestyle change (Tarasova, Caballero, Turner & Inzucchi, 2014).

Language barriers have been implicated in reduced medication adherence, greater likelihood of hospital admission, longer hospital stays, and increased resource utilization. A retrospective cohort design study found that the type of language services received by diabetic patients was significantly related to relevant utilization outcomes. Patients seeing language-concordant providers at 100% of their primary care visits were least likely to have diabetes-related hospitalization and emergency visits and noted that the challenges inherent in providing services to a diversifying population deserve further study to determine the best policy and practice strategies to achieve this goal (Hacker et al, 2012). A study of Arab American immigrants in New York City identified language barrier as one of the most profound and pervasive barriers to health care access. Although they could speak English, the women in the study still preferred to see healthcare providers who speak Arabic. Both men and women in the study questioned why so few Arabic resources on health concerns are available (Young, 2013).

Health care professionals need to pay attention to various aspects like style and content of verbal interaction, verifying patient understanding, determining perceptions of key messages, and other strategies in fostering behavior change (Kadirvelu, Sadasivan & Hui Ng, 2012). A descriptive qualitative study noted that physicians frequently encounter situations where effective

communication is difficult as in situation when physicians and patients do not speak the same language (Parsons, Baker, Smith-Gorvie & Hudak, 2014). Language concordance between patients and physicians, shared understanding of advice and availability of interpreters are elements of support in the consultation and are associated with decreased communication errors, increased patient satisfaction and adherence with medications and follow-ups (Abdulhadi, Al-Shafaee, Wahlström & Hjelm, 2013).

Communication difficulties faced by patients may be due in part to differences in vocabulary, but may also be attributed to differences in the structure and complexity of speech used by literate and low-literate populations. The centrality of patient voice is all the more critical in recognition of the cultural diversity that often characterizes vulnerable populations and distinguishes them from the majority culture (Cooper & Roter, 2003). Cultural differences in verbal and nonverbal communication are critical and key skills include attending to rules of conversation, choosing personalized or more detached interaction modes, selecting direct versus indirect approaches, and the therapeutic use of silence, proxemics, and touch (Tripp-Reimer, Choi, Kelley & Enslein, 2001). Culture and language capabilities influence the patient's health beliefs, attitudes, health literacy, thereby affecting diabetes self-management (Nam, Chesla, Stotts & Kroon, 2011).

In regard, there is evidence from the above past studies that healthcare provider patient verbal language use communication's role in the management of diabetes mellitus is critical. It is therefore important to examine the effect of healthcare provider patient verbal language use on diabetes mellitus management practices in selected hospitals Kenya in order to understand how it is used during the interaction between the healthcare provider and the patient as a tool to improve diabetes mellitus management practices. Therefore, the ultimate objective of any healthcare provider patient communication is to improve the patient's health and medical care, since satisfied patients are advantageous for doctors in terms of greater job satisfaction, less work-related stress, and reduced burnout (Fong Ha & Longnecker, 2010).

1.1. Statement of the Problem

The communication process among patients, nurses and other health workers is still not considered to be very effective as difficulties are observed in clinical practice between professionals and patients, which strongly affect satisfaction, treatment adherence and consequently health outcomes (Damasceno, Zanetti, Carvalho, Teixeira, Araújo & Alencar, 2012). Physcians have grown used to giving orders to diabetes patients without necessarily realizing the extra burden those orders place on the person with diabetes (Alzaid, 2014). Nurse communication plays a pivotal role in supporting patient health, unfortunately, less than 20% of T2DM patient reach all three targets for blood glucose (HbA1C), lipids levels, and blood pressure (Mulder, Lokhorst, Rutten & van Woerkum, 2014).

The quality of the nurses' consultations is sub-optimal in about 75% of 85% consultations regarding aspects of consultation environment, care and information (Abdulhadi, Al-Shafaee, Östenson, Vernby & Rolf Wahlström, 2006). Medical encounters are characterized by more of physicians' dominance and less of attention to the patients' concerns, expectations and role in their own diabetes management and self-monitoring (Abdulhadi, Al Shafaee, Freudenthal, Östenson & Wahlström, 2007). Diabetes mellitus requires a complex assortment of time-sensitive communications activity and interventions to avert serious complications and the

dominant unidirectional clinician-biased forms of communication employed by healthcare professionals were a major barrier (Forbes, Sidhu & Singh, 2011) and as many as 50% of patients leave the hospital visit not knowing what they are supposed to do to take care of themselves (Heisler, Bouknight, Hayward, Smith & Kerr, 2002). Effective physician communication is significantly positively correlated with patient adherence and there is a 19% higher risk of nonadherence among patients whose physician communicates poorly than among patients whose physician communicates well (Zolnierek & DiMatteo, 2009). Despite the appropriate diabetic management practices, patients are noted to move from one healthcre provider to another or change facility with the belief that they will be be served better elsewhere. Again, diabetic patients in Africa have reported that the major concern in patient care is the lack of follow up (Azevedo & Alla, 2008). Though communication always takes place in healthcare provider patient encounters, its quality and effectiveness is of significance in regard to the desired health outcomes, as poor communication can negatively influence DM management (Campos, 2006). Often, providers are unaware of the communication needs of their patients and do not tailor their communication styles to fit patients' needs (Ngo-Metzger, 2006).

In spite of the great strides that have been made in the treatment of diabetes in recent years, many patients do not achieve optimal outcomes and still experience devastating complications that result in a decreased length and quality of life (Funnell & Anderson, 2004). Less than half of persons with diabetes meet the recommended levels of HbA1c, blood pressure and lipid control. Additionally, poorly managed diabetes is associated with serious complications including stroke, blindness, heart disease, kidney disease, nerve damage, amputations, and death (Alhodaib & Hala, 2014). The above studies show evidence that healthcare provider patient communication's place in the management of diabetes is critical. It is therefore important to examine the effect of healthcare provider patient communication on diabetes mellitus management practices in Kenya in order to understand how communication is used during the interaction between the healthcare provider and the patient as a tool to improve diabetes mellitus management practices.

1.2. Objective: To establish the effect of healthcare provider patient verbal language use on diabetes mellitus management practices in selected hospitals in Kenya.

1.3. Hypothesis: There is no significant effect of verbal language use by the healthcare provider and the patient on diabetes mellitus management practices in selected hospitals Kenya

2.0. LITERATURE REVIEW

2.1. Empirical review

Hacker, Choi, Trebino, Hicks, Friedman, Blanchfield & Gazelle, 2012, in a retrospective cohort design study, it was noted that language concordant providers may help reduce health care utilization for limited English proficient patients with diabetes. Hospital and medical record data were examined for 1425 limited English proficient patients in the Cambridge Health Alliance diabetes registry. The researcher categorized patients receiving usual care into 7 groups based on the amount and combination of language services received at primary care visits during a 9-month period. Bivariate analyses and multiple logistic regression were used to determine relationships between language service categories and outcomes in the subsequent 6 months. Patients who received 100% of their primary care visits with language concordant providers

were least likely to have diabetes-related emergency department visits compared to other groups (p<0001) in the following 6 months. The study population was drawn from patients enrolled in the Cambridge Health Alliance diabetes registry prior to July 1, 2007. Only patients whose preferred language of care, identified at initial registration at Cambridge Health Alliance, was a language other than English were designated as limited English proficient and included in the study. The results suggest that these groups may have the most to benefit from language-concordant providers. According to the researcher, further research is needed to ascertain whether this is unique to the CHA population or generalizable elsewhere (Hacker et al, 2012).

It is worth noting that this study was one of the first to examine the impact of amount and type of language services received on diabetes outcomes (Hacker et al, 2012). While it suggests that language-concordant providers may help reduce health care utilization for limited English proficient patients, it is unlikely that health care systems will ever be able to provide enough language-concordant providers to meet demand. Yet, to ensure that limited English proficient patients receive high quality care, multiple strategies are needed to increase the availability of language-concordant providers including recruiting and retaining more bilingual individuals to the health care professions, as well as providing testing and training to build the language capacities of bilingual primary care providers. In addition, systems serving diverse populations must clarify why some limited English proficient patients do not receive language services at some or all of their visits and whether this has an impact on quality of care. The challenges inherent in providing services to a diversifying population deserve further study to determine the best policy and practice strategies to achieve this goal. More research is needed to understand how provider language fluency impacts health outcomes particularly given that language proficiency may vary among providers. Too, further research is needed to ascertain whether this is unique to the CHA population or generalizable elsewhere (Hacker et al, 2012).

According to Abdulhadi, Al-Shafaee, Wahlström & Hjelm, 2013, an exploratory qualitative study, with semi-structured interviews was conducted to explore the experiences of primary health-care providers' encounters with patients with type 2 diabetes where a total of 26 health-care professionals (19 doctors and 7 nurses), aged 25–55 years, and working in diabetes care at PHCCs were interviewed. All interviews were audiotape-recorded with the participants' consent and transcribed verbatim. Qualitative content analysis was applied inductively. The study noted that good patient provider interactions and communication skills have been linked in empirical studies to favourable patient outcomes, such as satisfaction and recall, adherence, symptom resolution and better quality of life. The study did expose several barriers to good diabetes care in the urban region of Oman. The non-Arabic speaking doctors expressed language problems with patients who did not speak English. They avoided deep discussions or social talk with the patients and focused only on the current medical condition. They suggested avoiding giving instructions to the patients, but instead have good communication and respect their concerns, as this would be a more useful way to correct the patients' understanding of diabetes and gain their cooperation (Abdulhadi, Al-Shafaee, Wahlström & Hjelm,2013).

This study had an explorative aim, and the main goal in qualitative research is to understand reality and gain information about issues or situations of central importance for the purpose of the inquiry rather than empirical generalization. However, the relevance of findings for other settings could be considered by countries with similar characteristics. The background of the

principal investigator as a medical doctor employed by the MoH is that such a connection might either enhance or reduce the credibility. Clearly defined professional roles and appropriate education to support patients to be able to have a key role in their own care could be useful as the next step to develop diabetes services at primary care level in Oman. A discussion of the findings among the policy and decision makers in the MoH in Oman could lead to suggestions to strengthen the organization of diabetes care to support patients' needs, and thereby raise the quality of care and health outcomes. The findings further reflect the need for changes in professional behaviour towards less authoritarian and more patient-centred care, and to recognize cultural influences and the patients' beliefs in order to individualize the care according to each person's needs (Abdulhadi et al, 2013).

In another explorative study by Dulmen, van Verhaak & Bilo, 1997, to examine whether doctor's and patient's verbal and nonverbal communication behaviours change during a series of consecutive outpatient consultations in NIDDM, findings suggest that communication patterns do indeed change. During the initial visit the proportion of speaking time as well as the proportion of affective and instrumental utterances did not appear to differ between doctor and patient. In subsequent visits, however, doctor's speech predominated and this predominant communication appeared to be primarily instrumental, whereas patient communication was mostly affective. The study focused exclusively on the dyadic consultations between the patient and the internist. Doctor-patient communication during the 54 consultations was measured by the Roter Interaction Analysis System (RIAS), which is specially designed to code both doctor and patient communication. The general affective impression of doctor's and patients' communication was rated on four six-point rating scales, measuring irritation, nervousness, interest and warmth. Findings suggested that the first consultation is most important for building an effective doctor-patient relationship, the second for discussing treatment matters, and the third for addressing psychosocial issues. The health outcome of outpatients with NIDDM may possibly benefit if the compatibility in communication between doctor and patient during the initial contact are maintained during repeat consultations (Dulmen, van, Verhaak & Bilo, 1997).

The findings by Dulmen, van Verhaak & Bilo, 1997 indicate that during the initial outpatient consultation the doctor-patient interaction is more equal and reciprocal. Conversely, the findings also suggest that once the doctor-patient relationship has been established, less effort is put into maintaining it. The observed lack of congruency between doctor and patient in subsequent visits might engender, however, a risk of overlooking important cues, such as psychosocial issues like patient needs and concerns, which are known to be related to the compliance and general well-being of the patient with NIDDM**.** A remarkable finding is that, although in the study, repeat consultations seemed less balanced than initial ones, this imbalance was not reflected in a decrease in patient satisfaction scores or in changes in the scores on the affect scales as parameters for the affective impression of the consultation. Nevertheless, on the basis of patient satisfaction scores, consecutive consultations can roughly and tentatively be characterized in terms of patients' most highly valued communication parameters (Dulmen, van Verhaak & Bilo, 1997). In regard to methodology the number of patients in this study was relatively small, particularly with regard to the number of patients who started with insulin therapy during the outpatient consulting period. Larger samples will be required to examine the effect of doctor-patient communication on the mutual decision to commence insulin therapy. Additionally, only

one doctor and eighteen patients took part in this study. Therefore, one might argue that, instead of consultation differences, our results are only a reflection of the doctor's working style. Nevertheless, further work is needed to examine this and to determine the generalizability of the present results. Moreover, as there appear to be meaningful shifts in communication patterns over time, further research into medical communication should be careful neither to mingle initial and repeat consultations, nor to generalize findings from initial to subsequent consultations. In this respect, there is not only a need for less variability in complaints for which patients go to the doctor, but also in the rank order of the consultation (Dulmen, van Verhaak & Bilo, 1997).

2.2. Theoretical Framework

This study uses two theoretical frameworks, that is, uncertainty reduction theory and communication accommodation theory. These two theories seek to explain how individuals plan, activate and create effective and sometimes ineffective goals and messages, and how individuals process, appraise and cope with incoming information and uncertainty, situations that are very common in healthcare; situations similar to what is under investigation in this study.

2.2.1. Uncertainty reduction theory

The first theoretical framework that informs this study is uncertainty reduction theory. This theory generally concentrates on the reduction of the high level of cognitive uncertainty present in an initial interaction. It also distinguishes between a predictive component and an explanatory component. In formulating their uncertainty reduction theory Berger and Calabrese attempted to model the processes through which communication is used to reduce uncertainty in an initial interaction between strangers (Berger & Calabrese, 1975). As one of the uncertainty theories, it is an individually-centered theory that was originally developed to explain initial communication interactions between strangers. Central to its claim is the assumption that an individual's primary goal in initial communication is to increase predictability and decrease uncertainty of one's own behaviors and the behaviors of others. In time, theorists began to broaden URT's scope of application to explain uncertainty in interpersonal communication in general as opposed to solely in initial interactions. One such application was in healthcare communication. Scholars found uncertainty to play a vital role in shaping provider-patient interaction as patients face uncertainty, including symptom attribution, state of the illness, treatment options and prognosis, social roles and predicting the effect of the illness on friends, family, and personal long-term plans (Bylund, Peterson & Cameron, 2012).

Information exchange is a basic human function in which individuals request, provide, and exchange information with the goal of reducing uncertainty. Uncertainty Reduction Theory (URT) recognized that reducing uncertainty was a central motive of communication. It was developed to describe the interrelationships between seven important factors in any dyadic exchange; verbal communication, nonverbal expressiveness, information-seeking behavior, intimacy, reciprocity, similarity, and liking (Berger & Calabrese 1975). From those concepts, the researchers introduced a collection of axioms, supported by past uncertainty research. Each axiom states a relationship between a communication concept and uncertainty. From the basis of axioms, the theorists were able to use deductive logic to infer twenty-one theorems that comprise

the theory of uncertainty reduction. Uncertainty is unpleasant and therefore motivational; people communicate to reduce it.

Uncertainty reduction follows a pattern of developmental stages (entries, personal, exit). Much of the interaction in this entry phase is controlled by communication rules and norms, characterized by the granting of essential demographic information (Berger & Calabrese 1975). During personal phase, the communicators feel less constrained by rules and norms and tend to communicate more freely with each other, reveal attitudes, beliefs, and more personal information. During the exit phase, the communicators decide on future interaction plans, characterized by the granting of less information and by the avoidance of communication altogether. However, any particular conversation maybe terminated at the end of the entry phase. Besides the stages in uncertainty reduction patterns, there is a distinction between three basic ways people seek information about another person (Berger, 1986). Of interest is the area between the entry and personal phases. Here, where trust is a formed, passive, active, and interactive strategy can reduce uncertainty and facilitate a more productive relationship. Passive strategies include unobtrusive observation of a person while active strategies might include finding out about the person from others. In the case of the doctor-patient relationship, the doctor might read the case-history notes of another practitioner or take a briefing about the patient from another practitioner. Interactive strategies, on the other hand, are dialogic and conversational in nature. The model holds that, together with passive and active strategies, dialogue and especially increased frequency of dialogue, builds coalitions.

In addition to the identification of the three 'relationship' phases, Berger and Calabrese's work offers a number of axioms from which are derived a range of theorems. Of the axioms, most pertinent is that as the amount of verbal communication between strangers' increases, uncertainty decreases and that as the number of non-verbal affiliative expressions increase, uncertainty decreases. Of the theorems, those most relevant are: that quantum of speech and quantum of non-verbal communicative expressions are positively related; that quantum of talking and level of intimacy are positively related; and that quantum of non-verbal expression and level of intimacy are positively related (Bylund, Peterson & Cameron, 2012). URT interrogates the nature of initial meetings between strangers, such as the first consultation between patient and doctor and suggests how the inevitable uncertainty between such dyadic encounter might be overcome. The theory integrates most of the study concepts directly and indirectly as discussed above.

2.2.2. Communication accommodation theory

Communication accommodation theory (CAT) was developed by Howard Giles in 1973, argues that "when people interact they adjust their speech, their vocal patterns and their gestures, to accommodate to others". It explores the various reasons why individuals emphasize or minimize the social differences between themselves and their interlocutors through verbal and nonverbal communication. This theory is concerned with the links between "language, context and identity". It focuses on both the intergroup and interpersonal factors that lead to accommodation as well as the ways in which power, macro and micro-context concerns affect communication behaviors (Gregory Jr. & Webster, 1996). There are two main accommodation processes described by this theory. "Convergence" refers to the strategies through which individuals adapt

to each other's communicative behaviors, in order to reduce these social differences. Meanwhile, "divergence" refers to the instances in which individuals accentuate the speech and non-verbal differences between themselves and their interlocutors (Gregory Jr. & Webster, 1996).

CAT evolved from the speech accommodation theory (SAT), but can be traced back to Giles' accent mobility model of 1973. The speech accommodation theory was developed in order to demonstrate the value of social psychological concepts to understanding the dynamics of speech. It sought to explain "the motivations underlying certain shifts in people's speech styles during social encounters and some of the social consequences arising from them". Particularly, it focused on the cognitive and affective processes underlying individuals' convergence and divergence through speech. The communication accommodation theory has broadened this theory to include not only speech but also the "non-verbal and discursive dimensions of social interaction". Thus, it now encompasses other aspects of communication. In addition, CAT has moved in a more interdisciplinary direction than the previous speech accommodation theory. It now also covers a wider range of phenomena (Gregory Jr. & Webster, 1996).

A broadly heuristic theory, CAT sets out to 'describe and explain aspects of the way people modify their communication according to situational, personal, or even interactional variables.' More significantly, the model provides a framework through which changes in communicative behaviour might be considered in relation to certain psychological processes that either diminish or exacerbate the differences between interlocutors (Ryder & Garagounis, 2014). Two descriptors 'reference' these polarities: processes of convergence, and processes of divergence of significance to the doctor-patient relationship, especially in its crucial early phase, when a speaker aims to improve the quality of interaction, in a process called 'communicative tuning', he or she will select communication strategies that attend to and/or anticipate the communication needs and characteristics of another. This may involve using plain language (as opposed to jargon), offering affiliative non-verbal cues, asking open questions, and mimicking the body language and speech behaviour of the other party. While the latter may sound potentially offensive, when people converse it is surprisingly common for them to mimic each other's speech. This is done almost intuitively, but in a muted, reciprocal way. Under these circumstances, such mimicking is interpreted as mutually sympathetic interaction and a sign of symmetrical communication (Ryder & Garagounis, 2014).

Communication accommodation theory is useful in this study as it aids in understanding how doctors can provide satisfactory care to patients through the ability to be not only a provider but also an active listener. CAT is a model for understanding the way two people interact with each other and revolves around the principle that their interaction is fundamentally transactional in nature. People are thought to make behavioral adjustments to manage their levels of social distance when interacting with others, and CAT provides a theoretical basis to forecast and account for such adjustments. One of the strategies comprising CAT is approximation, which involves convergence and divergence defined as whether individuals are adjusting their behaviors to match or differentiate their speech and nonverbal communication to another's style. The CAT model has previously been used to investigate physician-patient communication and interaction: adapted as a method for understanding the role that nurturing communication plays during interpersonal interactions among health professionals and patients and used as a

mechanism to explore intergroup communication between hospital doctors and the implications it has on levels of patient care (Mickel, McGuire & Gross-Gray, 2013).

CAT is a theory that describes the psychologic, social, and linguistic behaviors that people exhibit when communicating with each other. According to this theory, communication between two people can at any time be adjusted by either party in response to actual, perceived, or stereotyped expectations of the other person. This theory has potential in examining the patient-practitioner dyad to understand how ambulatory medical visit conversations function and where communication interventions may be useful to improve patient outcomes. One premise of CAT is that a defining characteristic of social groups is a common set of social and language behaviors. When members from different groups try to communicate they must find a way to adjust to each other's different communication styles and abilities. The strategies that people use to adjust their communication include approximation, interpretability, interpersonal control, and discourse management. The two strategies to focus on in the study, interpersonal control and discourse management, are psychologic elements of communication that are evident in the flow of communication between practitioners and patients and are more readily examined in written transcripts than the other two strategies (Hehl & McDonald, 2014).

Practitioner communication content and styles similar to CAT approximation and interpretability strategies have been previously examined, but not simultaneously with the patient's role in the communication encounters. For example, if a practitioner believes that older adults are typically hard of hearing and are naïve of medical terminology they may alter their volume and choice of words to attempt to accommodate the older adult listener. Although this approach might be helpful and well received by some older adults, others may find this speech pattern condescending. The older adult may also alter own speech behaviors to decrease the risk of seeming too demanding in an attempt to please the practitioner whom they may see as an authority figure. These preconceived ideas and biases are fraught with danger in a medical visit setting, because they may get in the way of therapeutic relationships and prevent the exchange of important information from both the practitioner and the patient (Hehl & McDonald, 2014).

In CAT, one’s statements are viewed in the context of their partner’s statements. This contextual view allows one’s statements to be classified as either converging to or diverging from the partner’s statements. Acts of convergence and divergence influence the patient-physician relationship, because converging statements signify a desire to gain approval, affiliate, establish rapport, and communicate meaning effectively, whereas diverging statements aim to separate, exert control, and generally downplay the statements of the partner. It takes listening aligned toward understanding, not just the collection of factual data. And it takes raising one’s awareness to clues - nonverbal signals, fleeting glimpses of emotion, and key words (Haidet, 2007).

3.0. METHODOLOGY

3.1. Study population

The target population comprised of all persons with diabetes mellitus. The accessible population involved both the female and male patients with diabetes mellitus aged 18 years and over who had been attending Kenyatta National Hospital (KNH) and MP Shah Hospital outpatient diabetic clinics for twelve (12) month and over and healthcare providers attending to patients with

diabetes mellitus at KNH and MP Shah Hospital outpatient diabetic clinics. The register for diabetes mellitus patients who attended the diabetic clinics at KNH and MP Shah Hospital was used to help in sampling. Systematic random sampling was used to sample the patients. The sample was from the total number of patients that made up the clinic attendance register for the given period of sampling. Kenyatta National Hospital was allocated 313 and MP Shah Hospital 87 and all to make the total of 400 respondents.

3.2. Sampling Frame

The patient register for diabetes mellitus patients who attended the diabetic clinics at Kenyatta national hospital and MP Shah Hospital was used. The sampling frame is as depicted in table 1 below.

Table 1: Healthcare providers / patients at the diabetes mellitus clinics, KNH / MP Shah Hospital

	Kenyatta National Hospital	Mp Shah Hospital	Total
Patients	313	87	**400**

Source: Kenyatta National Hospital/ MP Shah Hospital Diabetic Clinics

As in table 1 above, a total of 400 patient participants were involved in the study, 313 at KNH and 87 at MP Shah Hospital.

3.3. Sample and Sampling Technique

3.3.1. Sample

The sample size was determined according to this formula:

(i) $$n = \frac{Z^2 \, p \, q}{d^2}$$

Since there were no estimates available of the proportion in the target population assumed to have the characteristic of interest, 50% was used as recommended by fisher et al. (Mugenda & Mugenda, 1999). Therefore, since the target population with the characteristic is 0.50, the z-statistic is 1.96, and the desired accuracy is at the 0.05 level, the sample size would be:
If, Z – 1.96 P – 0.50 q - 0.50 d – 0.05

Then, $$n = \frac{(1.96)2 \; (0.050) \; (0.50)}{(0.05)2}$$

n= 384

Given that a study on communication was done at Moi Referral and Teaching Hospital (MTRH), Eldoret, to describe perceived physician communication behaviors and its association with adherence to care among HIV patients in Kenya, whereby a convenient sample of 400 HIV adult patients, attending three Academic Model Providing Healthcare program (AMPATH) clinics in Eldoret, Kenya was surveyed between July and August 2011 (Wachira et al, 2014), the present

study did in regard to the calculated sample size above and to cater for any drop outs peg its sample to 400 participants.

3.3.2. Sample technique

This was by systematic random sampling, whereby the patients were picked as follows. The sample was from the total number of patients that made up the clinic attendance register for the given period of sampling and from this as per required sample size, the total number of patients was divided by the calculated sample size and hence every n^{th} Patient would then be sampled to make up the sample. The accessible population who were all the patients attending the outpatient diabetic clinic at K.N.H in a year was approximately 3726 (main clinic, done on Fridays only) and 5797 (mini clinic, that runs on a daily basis). These were patient consultations as patients seen in the main clinic can end up being seen in the minor clinic on any other day of the week throughout the year. Therefore, there is repetition at the minor clinic. As such the figure of the main clinic (3726), as advised by the Kenyatta diabetes clinic was used as the accessible population from whom the participants were sampled. These figures were according to diabetic clinic attendance of January to December 2015. Too, all patients, approximately 2954 attending the MP Shah Hospital's diabetic clinic, which operates on a daily basis from Monday to Friday, formed part of the accessible population. This figure was in regard to the diabetic clinic attendance of the year July 2017 / June 2018 whereby there were 1030 new patients and 1924 revisits. Therefore, the figure of new patients (1030) was used since this same patients did come back to be seen as revisits.

To avoid double recruitment, the patient registration numbers were referred to throughout the whole research study exercise. To get the sampling interval, the accessible population of approximately 3726 (main clinic, KNH) and 1030 (MP Shah Hospital) was used, whereby each was divided by allocated proportionate samples of 313 patients' (KNH) and 87 patients' (MP Shah Hospital) of the total 400 to yield a sampling interval of 11.90415335 for KNH and 11.83908046 for MP Shah Hospital, approximated to 12 respectively. Hence, every 12^{th} participant at every research centre was sampled to make up the sample size and was done till the total sample size was achieved. As advised by the diabetic clinics to use the main (new patients) clinics attendance visits in the year, the rationale for the distribution of the respondents between KNH and MP Shah Hospital was in regard to the new visits in the year depicted by the main clinic attendance (new visits in the year) of 3726 at KNH and 1030 as new patients but actually being the first visit in the year at the clinic in MP Shah Hospital. The total volume of patients seen at both clinics, viz, 5797 (KNH) and 2954 (MP Shah Hospital) included both the new patients and the re-attendances. As such the new visits numbers was used to calculate the respective allocations of the sample size to each study area as follows. Since the total number of the main clinic (new) attendance for both study areas is 3726 + 1030 = 4756 in a year which corresponded to the sample of 400 participants; to get the proportionate sample for each of the study area, the computations below was of essence:

Thus,

If, 4756 patients corresponded to 400 participants

Then, 3726 (KNH) would correspond to; 3726 multiplied by 400 divided by 4756 = 313.372582

rounded off to 313, and 1030 (MP Shah Hospital) would correspond to 1030 multiplied by 400 divide by 4756 = 86.627418 rounded off to 87. Therefore, KNH would be allocated 313 and MP Shah Hospital 87 and all to make the total of 400 respondents.

3.4. Data collection Instrument

To collect data, the researcher used a researcher administered questionnaire for patients**.** It did seek information on their sociodemographic data; healthcare provider patient communication and diabetes mellitus management practices.

3.5. Research Design

This was a causal comparative research design study, with application of quantitative methodology. Quantitative methods emphasize objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques and focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon/research design that seeks to find relationships between independent and dependent variables after an action or event has already occurred, by comparing two or more groups of individuals (Babbie, 2010; Muijs, 2010; Salkind, 2010). Ex post facto research is a method that can also be used instead of an experiment, to test hypotheses about cause and effect in situations where it is unethical to control or manipulate the dependent variable (Cohen, Manion & Morrison, 2007).

The design seeks to establish causal relationships between events and circumstances, to find out the cause of certain occurrences or non-occurrences. This is achieved by comparing the circumstances associated with observed effects and by noting the factors present in the instances where a given effect occurs and where it does not occur. Attempts are made to explain the consequences based on the antecedent conditions; determine the influence of a variable on another, and test a claim using statistical hypothesis testing techniques (Lord, 1973). Researchers can report only what has happened or what is happening, by trying to hold factors constant by careful attention to the sampling. The relationship between the independent variable and dependent variable is usually a suggested relationship because the researcher does not have complete control over the independent variable. As in the current study, the independent variable, healthcare provider patient communication had already occurred and its effect on the dependent variable, diabetes management practices had already taken place in the sample groups being studied. The groups though in healthcare settings differ by belonging either to a public or private healthcare setting; hence such circumstances could bear varying effects on them in regard to the study outcome.

3.6. Data Collection Procedure

The study was carried out at two sites; Kenyatta National Hospital, a public hospital and MP Shah Hospital, a private hospital. Data from these two sites was collected separately. At KNH, the researcher would visit on Fridays of every week when the main clinic is conducted to collect data. But since the registers and patient files are prepared a day prior to the actual clinic day, the researcher would visit the clinic a day prior, that is on Thursdays of every week to sample the participants to be recruited into the study as the clinic registers for patients were used for the

purpose. At MP Shah Hospital, the researcher would visit the clinic daily from Monday to Thursday as clinic days are conducted daily from Monday to Friday.

The recruitment of participants was done a week prior to the next week or the day prior to the next day at MP Shah Hospital, since according to the clinic, the registers and patient files are prepared a week/day prior, though booking of the patients for the specific clinic days would have been done at the previous clinic visit when they were attended to. Two research assistants were involved, with one of them coming daily from Monday to Friday and the other joining in on Thursdays and Fridays because of the MP Shah Hospital clinic on Friday since the clinic at KNH was conducted on the same day. Since the researcher had two research assistants, they would assist in the recruitment of the participants by visiting the sites together with the researcher except on Fridays when one research assistant would visit MP Shah Hospital to identify and physically recruit the participants by talking to them and agree with them on when they could meet the researcher to be taken through data collection within the next week. This whole process would be done by the researcher and his assistants helped by the staff at the clinic. The assistants and the staff did undergo some training in regard to the study requirements. Once identified and recruited, consent was sought from the participants.

To ensure that there was no double participant recruitment, the clinic attendance registers and patient record files were used and therefore the outpatient registration numbers of the patients noted at all times throughout the sampling and data collection. Since the clinics began at 8a.m and ended at 5p.m; and since the registers were used to identify the participants, recruitment began immediately the patients arrived and as they waited to be attended to by the healthcare providers, and if they had already been attended to, they would continue with the process, though they would also be allowed to collect the prescribed drugs or go for any tests or investigations or medical procedures requested for by the healthcare providers. The data collection instruments and data collected for KNH and MP Shah Hospital was kept separately.

Consenting was done by the researcher, by first explaining to the participant about the nature of the research and why it is being done by taking them through the consent explanation form contents and any questions raised would be answered. The selection process of the participant would be explained to him or her so that he/she understood as to why he/she had been selected. Once this was done and he or she agreed to participate, the informed consent form would be provided to the participant to sign in the presence of the researcher and once signed he/she was recruited into the study. Those who declined to participate were not recruited into the study. Data collection would then commence afterwards. In all this the researcher was assisted by his research assistants.

Data collection was done by the researcher only and this upon the participant consenting. The participants would be taken through the questionnaires. This took about 30 to 45 minutes to complete the questionnaire. Once data had been collected, the participant would be informed of the end of the exercise and how the information they had given was useful in the study. The researcher would thank the participant for agreeing and participating in the study. They would be informed of the confidentiality of their participation, the information they had given and the safe keeping of the research instrument. Once data had been collected, it was kept safely in a locker only accessible to

3.7. Data Analysis

Statistical analysis was then done after data was posted by a computer data base developed using statistical package for social sciences (SPSS) in version 23.0. The results were presented in descriptive and inferential form. Patient characteristics were summarized using percentages and means or medians for categorical and continuous data respectively. Comparisons were done between private and public hospital patients using chi square test of association for categorical variables and independent t-test for comparison of means. Healthcare provider patient communication rating were scored and calculated as overall mean scores for verbal language use. Healthcare provider patient verbal language use rating between the hospitals was compared using independent t-test. Similarly, diabetes mellitus management practices scores were summarized into means and compared between the two hospitals. Linear regression (simple linear regression and multiple linear regression model 1) as follows was used to test the relationship between healthcare provider patient verbal language use ratings and diabetes management practices scores. Test of significance was done at a significant level of 0.05 at 95% confidence interval to test hypotheses.

3.7.1. Simple linear regression

This was by the following formula:

$$y = \beta_0 + \beta_1 x_1$$

Where,
y – The dependent variable – diabetes mellitus management practices score
x – Independent variable (verbal language use score)

3.7.2. Multiple linear regression model 1

The regression model was developed using the following formula:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4$$

Where:
y – The dependent variable – diabetes mellitus management practices score
x – Independent variables 1, 2, 3 and 4 (verbal language use score, nonverbal communicative behaviour score, noise score and environmental context score)

4.0. FINDINGS AND DISCUSSION

4.1. RESULTS

4.1.1. Response Rate

Table 2: Distribution of Study Participants (Patients at Diabetes Mellitus Clinics, Kenyatta National Hospital / MP Shah Hospital)

Kenyatta National Hospital			MP Shah Hospital			Total		
Target	Actual	Response rate (%)	Target	Actual	Response rate (%)	Target	Actual	Response rate (%)
313	313	**100**	87	87	**100**	400	400	**100**

Source: Field Data (2019)

A sample of 400 participants, patients with diabetes mellitus aged 18 years and above at the diabetes and endocrinology Centre's of both Kenyatta National Hospital and MP Shah Hospital were involved in the study as is depicted in table 2. 313 patients at KNH and 87 patients at MP Shah respectively were studied between the months of February 2019 and November 2019. Overall, there were 166 (41.5%) male and 234 (58.5%) female patients. A response rate of 100% was achieved overall as well as at KNH and MP Shah Hospital. 400 questionnaires were sufficiently completed. This high response rate at both study centers was achieved as a result of the researcher being involved at every stage of data collection from the time of issuing to collection of the questionnaires.

4.1.2. Socio Demographic Characteristics

Table 3: Socio demographic characteristics of patients at Kenyatta National Hospital

Variable	Overall (n=313) n (%)	Male (n=123) n %	Female (n=190) n %	P value
Gender		-	-	-
Male	123 (39.3)			
Female	190 (60.7)			
Age				
Mean (SD)	59.3 (14.0)	61.2 (14.4)	58.1 (13.7)	0.053
Min – Max	18 – 92	22-92	18-86	
Age groups				
18-27	6 (1.9)	4 (3.3)	2 (1.1)	**0.047**
28-37	12 (3.8)	2 (1.6)	10 (5.3)	
38-47	41 (13.1)	9 (7.3)	32 (16.8)	
48-57	71 (22.7)	29 (23.6)	42 (22.1)	
58-67	83 (26.5)	35 (28.5)	48 (25.3)	
>67	100 (31.9)	44 (35.8)	56 (29.5)	
Marital status				
Single	36 (11.5)	8 (6.5)	28 (14.7)	**< 0.001**
Married	228 (72.8)	113 (91.9)	115 (60.5)	
Separated	3 (1.0)	0	3 (1.6)	
Divorced	3 (1.0)	0	3 (1.6)	
Widowed	43 (13.7)	2 (1.6)	41 (21.6)	
Highest level of education				
None	22 (7.0)	5 (4.1)	17 (8.9)	**0.010**
Primary	116 (37.1)	37 (30.1)	79 (41.6)	
Secondary	116 (37.1)	55 (44.7)	61 (32.1)	
College	40 (12.8)	14 (11.4)	26 (13.7)	
University	19 (6.1)	12 (9.8)	7 (3.7)	
Occupation				
Professional	76 (24.5)	34 (27.6)	42 (22.5)	**< 0.001**
Business personnel	118 (38.0)	44 (39.9)	75 (39.6)	
Technical personnel	19 (6.1)	15 (12.2)	4 (2.1)	
Skilled personnel	38 (12.3)	24 (19.5)	14 (7.5)	
Unskilled personnel	55 (17.7)	6 (4.9)	49 (26.2)	
Learner	4 (1.3)	0	4 (2.1)	
Religion				
Catholic	100 (31.9)	41 (33.3)	59 (31.1)	0.581
Protestant	201 (64.2)	79 (64.2)	122 (64.2)	
Muslim	5 (1.6)	2 (1.6)	3 (1.6)	
Other	7 (2.2)	1 (0.8)	6 (3.2)	

Source: Field Data (2019)

In table 3 above, three hundred and thirteen (313) diabetic patients with a mean age of 59.3 years (SD 14 years) were studied at KNH. There were 190 (60.7%) females with a mean age of 58.1 years (SD 13.7) and 123 (39.3%) males with a mean age of 61.2 years (SD 14.4), hence males being insignificantly older than females, p=0.053. The youngest patient was 18 years and the oldest 92 years old. In regard to males the youngest was 22 years and the oldest was 92years and for females the youngest was 18 years and the oldest 86 years.

The majority of patients in age group distribution were 67years and above (100 (31.9%)) with more females (56 ((29.5%)) than the males (44 (35.8%)). This was followed by those in the age group 58-67 years with more females (48 (25.3%)) than the males (35 (28.5%)). Except for the 18-27 year age group where male patients were significantly more than the female patients, there were significantly more female than male patients in the other age group distribution, p=0.047.

Majority of the patients were married (72.8%) being significantly higher in males (91.9%) than in females (60.5%), p<0.001. Overall, the highest level of education was mainly primary (37.1%) and secondary (37.1%) with significantly more males compared to females having secondary and university level of education, p=0.010. On the other hand significantly more females reported primary level, college level and no education than males, p=0.010.

Occupation was comprised mainly of professional work (24.5%) and business (38%). As regards professionals, business personnel, unskilled personnel and learners there were significantly more females than males and vice versa for the technical personnel and skilled personnel differences, p<0.001. In regard to religion the majority of the patients were of Catholic (31.9%) and Protestant (64.2%) denominations with the female patients insignificantly more in each category than the male patients.

Table 4: Socio demographic characteristics for patients at MP Shah Hospital

Variable	Overall (n=87) n (%)	Male (43) n %	Female (44) n %	P value
Gender				
Male	43 (49.4)	-	-	-
Female	44 (50.6)			
Age				
Mean (SD)	55.5 (10.0)	57.5 (6.9)	53.5 (12.0)	0.061
Min – Max	19.0 – 79.0	34-72	19-79	
Age groups				
18-27	1 (1.1)	0	1 (2.3)	0.188
28-37	5 (5.7)	1 (2.3)	4 (9.1)	
38-47	5 (5.7)	1 (2.3)	4 (9.1)	
48-57	38 (43.7)	18 (41.9)	20 (45.5)	
58-67	31 (35.6)	20 (46.5)	11 (25.0)	
>67	7 (8.0)	3 (7.0)	4 (9.1)	
Marital status				
Single	10 (11.5)	0	10 (22.7)	**0.008**
Married	72 (82.8)	41 (95.3)	31 (70.5)	
Separated	1 (1.1)	0	1 (2.3)	
Divorced	1 (1.1)	1 (2.3)	0	
Widowed	3 (3.4)	1 (2.3)	2 (4.5)	
Highest level of education				
Primary	4 (4.6)	1 (2.3)	3 (6.8)	0.137
Secondary	10 (11.5)	4 (9.3)	6 (13.6)	
College	23 (26.4)	8 (18.6)	15 (34.1)	
University	50 (57.5)	30 (69.8)	20 (45.5)	
Occupation				
Professional	60 (71.4)	35 (85.4)	25 (58.1)	0.114
Business personnel	15 (17.9)	4 (9.8)	11 (25.6)	
Technical personnel	2 (2.4)	1 (2.4)	1 (2.3)	
Skilled personnel	4 (4.8)	1 (2.4)	3 (7.0)	
Unskilled personnel	2 (2.4)	0	2 (4.7)	
Learner	1 (1.2)	0	1 (2.3)	
Religion				
Catholic	22 (25.6)	9 (21.4)	13 (29.5)	0.109
Protestant	52 (60.5)	26 (61.9)	26 (59.1)	
Muslim	5 (5.8)	1 (2.4)	4 (9.1)	
Other	7 (8.1)	6 (14.3)	1 (2.3)	

Source: Field Data (2019)

At MP Shah in table 4, 87 diabetic patients with a mean age of 55.5 years (SD 10 years) were studied; 50.6% were females and 49.4% males. Males were insignificantly older (mean age, 57.5 years) than females (mean age, 53.5 years), p=0.061. The youngest male was 34years with the oldest being 72 years while for the females, the youngest was 19 years and the oldest 79 years. In the age group distribution, the majority of patients were in the age group of 48 -57 years, 38 (43.7%) followed by those in the age group of 58-67 years, 31 (35.6%). The majority of the males were in the age group of 58-67 years, 20 (46.5%), followed with the ones in age group 48-57 years, 18 (41.9%). Majority of the females were in the age group of 48-57 years, 20 (45.5%), followed with the ones in the age group 58-67 years, 11 (25%). No significant difference was

noted by genders in the age group distributions. Majority of the patients were married and divorced which was significantly higher in males than females and vice versa for those who were single, separated and widowed p=0.008. Highest level of education was university education (57.5%) and the lowest was primary education (4%). Occupation of the patients was mainly of professional work (71.4%). As for religion, the majority of patients were of catholic (25.6%) and protestant (60.5) denominations. There were no significant differences between male and female patients in all categories of occupation and religion.

Table 5: Comparison of socio demographic characteristics between patients at Kenyatta National Hospital and MP Shah Hospital

Variable	KNH (n=313)	MP Shah (n=87)	P value
Gender			
Male	123 (39.3)	43 (49.4)	0.090
Female	190 (60.7)	44 (50.6)	
Age, mean (SD)	59.3 (14.0)	55.5 (10.0)	**< 0.001**
Category, n (%)			
18-27	6 (1.9)	1 (1.1)	**0.009**
28-37	12 (3.8)	5 (5.7)	
38-47	41 (13.1)	5 (5.7)	
48-57	71 (22.7)	38 (43.7)	
58-67	83 (26.5)	31 (35.6)	
>67	100 (31.9)	7 (8.0)	
Marital status			
Single	36 (11.5)	10 (11.5)	**0.050**
Married	228 (72.8)	72 (82.8)	
Separated	3 (1.0)	1 (1.1)	
Divorced	3 (1.0)	1 (1.1)	
Widowed	43 (13.7)	3 (3.4)	
Highest Level of Education			
None	22 (7.0)	0	**< 0.001**
Primary	116 (37.1)	4 (4.6)	
Secondary	116 (37.1)	10 (11.5)	
College	40 (12.8)	23 (26.4)	
University	19 (6.1)	50 (57.5)	
Occupation			
Professional	76 (24.5)	60 (71.4)	**< 0.001**
Business personnel	117 (38.0)	15 (17.9)	
Technical personnel	19 (6.1)	2 (2.4)	
Skilled personnel	38 (12.3)	4 (4.8)	
Unskilled personnel	55 (17.7)	2 (2.4)	
Lerner	4 (1.3)	1 (1.2)	
Religion			
Catholic	100 (31.9)	22 (25.6)	**0.008**
Protestant	201 (64.2)	52 (60.5)	
Muslim	5 (1.6)	5 (5.8)	
Other	7 (2.2)	7 (8.1)	

Source: Field Data (2019)

Gender distribution among patients was not significantly different between KNH and MP Shah Hospital, p=0.090 as in table 5. On age, the patients at KNH were significantly older as

compared to patients at MP Shah Hospital with an average age of 59.3 years as compared to 55.5 years respectively ($p<0.001$). There were significantly more patients in the 18-27, 38-47 and >67 years age group distribution at KNH than MP Shah Hospital and vice versa in the age groups of 28-37, 48-57 and 58-67 years, $p=0.009$. Though with no significant difference in gender distribution between the two hospitals, there were more male patients in percentage ratio at MP Shah Hospital (49.4%) than those at KNH (39.3%). The female patients were more in percentage ratio at KNH of 60.7% as compared to 50.6% female patients at MP Shah Hospital. What then accounts for the differences in both the age group and gender percentage proportionate between the two hospitals? The reasons could probably be adduced to affordability of the services by the patients. Since most of those above 67 years of age are likely to be in retirement and not so much actively involved in gainful income generating activities could hence explain the situation as seen at KNH. Those between 48 years and 67 years are most likely to be in active employment and additionally likely to be financially stable. In regard to gender, it is likely that as bread winners the male patients are more likely than the female patients to be more financially stable and thus cater for such medical needs in comparison to the female gender.

Of the other sociodemographic characteristics, a higher proportion of patients were married at MP Shah Hospital than KNH, while those who were widowed were more at KNH ($p=0.050$). Education level was significantly higher among patients at MP Shah Hospital than at KNH ($p<0.001$) and they were more likely to be in professional work ($p<0.001$). Similarly, there were significantly higher proportions of Muslims and other religions at MP Shah Hospital than at Kenyatta National Hospital ($p=0.008$) and vice versa for the catholic and protestant religious domination. Whether religion would be a critical factor sociodemographically in the management of diabetes mellitus is an area that requires more exploration to make a viable conclusion in regard.

Past studies have reported outcomes on SDFs as is in this study. Finding by Obirikorang, et al, 2016 are in tandem with the current study on the various demographic factors. The past study reported that the mean age of the general type 2 diabetic (T2D) patients was 55.28 ± 14.71 years. A higher proportion (46.9 %) of them was between the ages of 40–59 years. There were more female (61.5 %) than male (38.5 %). 73.8 % were married. 97.7 % had no socio-economic income, 78.5 % were unschooled, and 71.5 % had less than 5 year's duration of T2D. Other than on education where the unschooled were of a high percentage in comparison to the current study where those who had no education were 7% as reported at KNH, the other sociodemographic are comparably within the percentage range.

The foregoing analysis on the sociodemographic factors of patients overall and by hospital is essential in relation to the dynamics of the communication interactions between the healthcare providers and patients on diabetes mellitus management practices. This is augmented well by Baltaci, Eroz, Ankarali, Erdem, Celer & Korkut, 2013 study that for satisfaction with patient-physician communication, statistically significant differences were observed in patients' sociodemographic features such as marital status, education level, income level, occupation and gender but not existence of chronic diseases and age groups. This highlights the salient role the socio demographic characteristics play in healthcare provider patient communication.

4.1.3. The Effect of Healthcare Provider Patient Verbal Language Use on Diabetes Management Practices

Table 6: Healthcare provider patient verbal language use at Kenyatta National Hospital

Variable	Overall (n=313) Mean (SD)	Male (n=123) Mean (SD)	Female (n=190) Mean (SD)	P value
I understood the language in which the healthcare providers used while speaking with me during our interaction.	4.4 (0.6)	4.4 (0.5)	4.4 (0.6)	0.752
The healthcare providers spoke to me in vocabulary/words that I could understand easily.	4.3 (0.6)	4.3 (0.6)	4.3 (0.6)	0.606
The healthcare providers spoke at a pace/speed that enabled me to follow what was being discussed	4.3 (0.6)	4.3 (0.5)	4.3 (0.6)	0.669
The healthcare providers spoke to me in a way and nature of voice language that communicated caring and concern.	4.3 (0.6)	4.3 (0.5)	4.3 (0.6)	0.878
The healthcare providers encouraged me to equally participate in the discussion/conversation to the extent I wished during our interaction.	4.4 (0.6)	4.4 (0.6)	4.4 (0.6)	0.667
The healthcare providers' pronunciations of words in sound as spoken by the healthcare provider enabled me to follow what was discussed.	4.3 (0.6)	4.3 (0.6)	4.3 (0.6)	0.223
I was comfortable with the loudness in language voice pitch as spoken by the healthcare providers during our interactions.	4.3 (0.6)	4.3 (0.5)	4.3 (0.6)	0.834
The changing in language and word voice as spoken by the healthcare provider was in a way and manner that left me feeling that I was being attended to well	4.3 (0.6)	4.2 (0.6)	4.3 (0.6)	0.526
Overall Verbal language score	**83.0 (12.5)**	**82.6 (12.1)**	**83.3 (12.7)**	**0.648**

Source: Field Data (2019)

Patients at Kenyatta National Hospital **(**KNH) rated verbal language use highly with mean scores of more than four (4.0) in all the eight (8) areas in the domain as in table 6. Overall, the mean score on the verbal language use domain was 83.0 (SD 12.5) with the rating by the female

patients (mean, 83.3 (SD 12.7)) being higher than that by the male patients (mean, 82.6 (SD 12.1)). There was no significant difference observed by gender overall and for the individual components in the domain. This was of indication that the patients at KNH were generally more satisfied with the verbal language use in the way the healthcare providers communicated with them. Whereas the mean score rating was same in almost all the specific components of verbal language use, the female patients had a higher score rating (mean, 4.3 (SD 0.6)) than the male patients (mean, 4.2 (SD 0.6)) on the component of; the changing in language and word voice as spoken by the healthcare provider was in a way and manner that left patients feeling that they were being attended to well as regard voice inflection. It was therefore an indication that the female patients were happier and more satisfied than the male patients in this area of communication while interacting with them.

Table 7: Healthcare provider patient verbal language use at MP Shah Hospital

Variable	Overall (n=87) Mean (SD)	Male (n=43) Mean (SD)	Female (n=44) Mean (SD)	P value
I understood the language in which the healthcare providers used while speaking with me during our interaction.	4.6 (0.5)	4.6 (0.5)	4.7 (0.5)	0.458
The healthcare providers spoke to me in vocabulary/words that I could understand easily.	4.5 (0.5)	4.5 (0.5)	4.5 (0.5)	0.766
The healthcare providers spoke at a pace/speed that enabled me to follow what was being discussed	4.5 (0.5)	4.4 (0.5)	4.6 (0.5)	0.142
The healthcare providers spoke to me in a way and nature of voice language that communicated caring and concern.	4.6 (0.6)	4.6 (0.5)	4.5 (0.6)	0.917
The healthcare providers encouraged me to equally participate in the discussion/conversation to the extent I wished during our interaction.	4.6 (0.6)	4.5 (0.6)	4.6 (0.6)	0.531
The healthcare providers' pronunciations of words in sound as spoken by the healthcare provider enabled me to follow what was discussed.	4.5 (0.5)	4.4 (0.5)	4.5 (0.6)	0.377
I was comfortable with the loudness in language voice pitch as spoken by the healthcare providers during our interactions.	4.6 (0.5)	4.5 (0.5)	4.6 (0.5)	0.266
The changing in language and word voice as spoken by the healthcare provider was in a way and manner that left me feeling that I was being attended to well	4.4 (0.6)	4.3 (0.7)	4.5 (0.6)	0.205
Overall Verbal language score	**88.1 (10.9)**	**86.9 (10.4)**	**89.3 (11.4)**	**0.318**

Source: Field Data (2019)

At MP Shah Hospital as in table 7, patients rated verbal language use with high mean scores of more than four (4.0) in all the eight (8) faces in the domain. Overall, the mean score on the verbal language domain for healthcare provider patient communication was 88.1 (SD 10.9) with

no significant difference by gender in the rating whereby the mean score by the female patients (mean, 89.3 (SD 11.4)) was higher than that by the male patients (mean, 86.9 (SD 10.4)), p=0.318. On the individual components of verbal language use, the rating by female patients was higher in most of the components except for area of; the healthcare providers spoke to patients in a way and nature of voice language that communicated caring and concern in relation to voice tone in which the male patients rating of HCPs was of a higher mean score, 4.6 (SD 0.5) in comparison to that of the female patients with a mean score, 4.5 (SD 0.6). This depicted the high level of satisfaction for the HCPs on the voice inflection by the male patients, an indication that they found it quite comforting and inviting as a verbal language communication indicator. The score rating on the component; the way healthcare providers spoke to patients in vocabulary/words that the patients could understand easily as regards terms (vocabulary) was similar by both the male and female patients, mean score 4.5 (SD 0.5), an indication of the comparatively equal levels of satisfaction by patients of either gender.

Table 8: Comparison of healthcare provider patient verbal language use between Kenyatta National Hospital and MP Shah Hospital

Variable	KNH (n=313) Mean (SD)	MP Shah (n=87) Mean (SD)	P value
I understood the language in which the healthcare providers used while speaking with me during our interaction.	4.4 (0.6)	4.6 (0.5)	< **0.001**
The healthcare providers spoke to me in vocabulary/words that I could understand easily.	4.3 (0.6)	4.5 (0.5)	< **0.001**
The healthcare providers spoke at a pace/speed that enabled me to follow what was being discussed	4.3 (0.6)	4.5 (0.5)	**0.015**
The healthcare providers spoke to me in a way and nature of voice language that communicated caring and concern.	4.3 (0.6)	4.6 (0.6)	< **0.001**
The healthcare providers encouraged me to equally participate in the discussion/conversation to the extent I wished during our interaction.	4.4 (0.6)	4.6 (0.6)	**0.029**
The healthcare providers' pronunciations of words in sound as spoken by the healthcare provider enabled me to follow what was discussed.	4.3 (0.6)	4.5 (0.5)	**0.021**
I was comfortable with the loudness in language voice pitch as spoken by the healthcare providers during our interactions.	4.3 (0.6)	4.6 (0.5)	< **0.001**
The changing in language and word voice as spoken by the healthcare provider was in a way and manner that left me feeling that I was being attended to well	4.3 (0.6)	4.4 (0.6)	0.061
Overall Verbal language score	**83.0 (12.5)**	**88.1 (10.9)**	< **0.001**

Source: Field Data (2019)

On comparisons as noted in table 8, overall, the patients rated the verbal language use in healthcare provider patient communication significantly higher at MP Shah Hospital (mean, 88.1 (SD 10.9)) than at KNH (mean, 83.0 (12.5)), (p<0.001). The rating at MP Shah Hospital was significantly high in all the specific categories except on the component that; the changing in language and word voice as spoken by the healthcare provider was in a way and manner that left

patients feeling that they were being attended to well as regards voice inflection where though the rating by MP Shah Hospital (mean, 4.4 (0.6)) was higher than at KNH (mean, 4.3 (0.6)) there was no significant difference, p=0.061.

In regard to findings on the components of; the patients understood the language in which the healthcare providers used while speaking with them during our interaction as concerns language; the way healthcare providers spoke to patients in vocabulary/words that the patients could understand easily as regards terms (vocabulary); the healthcare providers spoke to patients in a way and nature of voice language that communicated caring and concern as regards voice tone and that the patients were comfortable with the loudness in language voice pitch as spoken by the healthcare providers during interactions as for speech volume, there were significantly higher mean score ratings at MP Shah Hospital than at KNH, $p < 0.001$. Also on the areas where; the healthcare providers spoke at a pace/speed that enabled patients to follow what was being discussed in regard to speech rate (p=0.015); the healthcare providers encouraged patients to equally participate in the discussion/conversation to the extent they wished during interaction as for the participation in discussion (balanced conversion) (p=0.029) and on the healthcare providers' pronunciations of words in sound as spoken by the healthcare provider enabled patients to follow what was discussed in regard to speech sounds (p=0.021) were rated significantly higher at MP Shah Hospital than at KNH. Healthcare provider patient communication at MP Shah Hospital was therefore rated better across all the areas that contributed to verbal language use than at KNH. These findings show that patients at MP Shah Hospital were more satisfied and positively agreeable with the nature of communication by the healthcare providers as compared to the patients at Kenyatta National Hospital.

4.1.4. Testing for Association

The relationship between verbal language use and diabetes mellitus management practices was analysed to find out the association between the independent and dependent variables. This was first done in regard to all the patient participants to get the entire outcome of the study sample and then among patients at each of the two separate hospitals to get the outcome. This was by simple linear regression and afterwards by multiple linear regression model 1.

4.1.4.1. Simple Linear Regression

Simple linear regression was performed to establish the relationship between verbal language use and diabetes mellitus management practices as follows. Was the independent variable a predictor of the dependent variable in regard to the associations' outcome between them?

4.1.4.1.1. Healthcare provider patient communication (HCPPC) and diabetes management practices (DMMPs) overall in Kenya

Table 9: Simple linear regression of HCPPC and DMMPs overall in Kenya

Variable	β (95% CI)	P value
Verbal language use	0.39 (0.28, 0.51)	**< 0.001**

N=400
a. Dependent Variable: Diabetes management
Significant at the 0.05 level (2-tailed).

Source: Field Data (2019)

In table 9, verbal language use (VLU) use was found to be significantly and positively associated with diabetes mellitus management practices among patients, β=0.39 (95% CI 0.28, 0.51), p<0.001. These findings on association are of the indication that verbal language use not only favourably and positively influenced but also had significantly positive effect on diabetes mellitus management practices among patients during communication with the healthcare providers. A unit increase in VLU had corresponding increase in DMMPs among the patients. Therefore the VLU was independently significant predictor of the response variable.

4.1.4.1.2. Healthcare provider patient communication (HCPPC) and diabetes management practices (DMMPs) by Hospital

Table 10: Simple linear regression of HCPPC and DMMPs by Hospital

Variable	KNH		MP Shah	
	β (95% CI)	**P value**	**β (95% CI)**	**P value**
Verbal language use	0.40 (0.27, 0.53)	**< 0.001**	0.43 (0.19, 0.66)	**< 0.001**

N=400

a. Dependent Variable: Diabetes management

Significant at the 0.05 level (2-tailed).

Source: Field Data (2019)

Correspondingly as appears in table 10, similar relationships were found when the analysis was stratified in regard to Kenyatta National Hospital and MP Shah Hospital patients. Positive significant association was found among patients in regard to diabetes mellitus management practices and verbal language use, β = 0.40 (0.27, 0.53), < 0.001 at KNH and β = 0.43 (0.19, 0.66), < 0.001 at MP Shah Hospital. Therefore, a unit increase in verbal language resulted in improvement performance in DMMPs overall, at KNH and MP Shah Hospital.

Therefore, verbal language use has positive significant effect on diabetes mellitus management practices at Kenyatta National Hospital and MP Shah Hospital respectively. Again as in the overrall outcome above, by hospital, the VLU independently predicted the response variable. The predictor variable was responsible for patients' good performance in the DM management practices overall as well as at the two hospitals.

4.1.4.2. Multiple Linear Regression Model 1 (Adjusted – Communication Variables)

The healthcare provider patient communication variables of verbal language use, nonverbal communicative behaviour, noise and environment context as predictors were all considered together in the multiple linear regression model 1 analysis in order to determine their level of influence on diabetes mellitus management practices. The model was further adjusted for the healthcare provider patient communication variables to determine the independent predictors of DMMPs among patients overall. Forward stepwise regression method was used to generate the model. Thus, the independent effect of the predictor variables was brought out in the analysis as follows.

4.1.4.2.1. Healthcare provider patient communication (HCPPC) and diabetes management practices (DMMPs) overall in Kenya

Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.579[a]	0.335	0.328	12.29705

a. Predictors (Constant): verbal language use, nonverbal communicative behaviour, noise, environmental context

Source: Field Data (2019)

From table 11, the value of R was 0.579, an indication that verbal language use, nonverbal communicative behaviour, noise and environment context as predictors had an influence on DMMPs. 33.5% variations of DMMPs were as a result of the four independent variables. An analysis of variance (ANOVA) was also done to ascertain whether the four independent variables were significant predictors of DMMPs as summarized in table 12 below.

Table 12: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30062.880	4	7515.720	49.701	**0.000**[b]
	Residual	59730.870	395	151.217		
	Total	89793.750	399			

a. Dependent Variable: Diabetes mellitus management practices
b. Predictors: (Constant), verbal language use, nonverbal communicative behaviour, noise, environmental context

Source: Field Data (2019

From table 12, the ANOVA findings [F (4, 395) =49.701, P<0.05)] of the significance value of p= 0.000 depicted that there existed significant influence of the predictor variables, nay, verbal language use, nonverbal communicative behaviour, noise and environment context on the response variable, nay diabetes mellitus management practices.

Table 13: Multiple regression model 1 (Adjusted communication variables) of HCPPC and DMMPs overall in Kenya

Variable	β (95% CI)	P value
Verbal language use	0.04 (-0.09, 0.17)	0.552

Dependent Variable: Diabetes mellitus management practices

Source: Field Data (2019)

From further regression analysis as in table 13 above, overall verbal language use [β=0.04, (95% CI -0.09, 0.17), p=0.552] was not statistically significant on adjustment using stepwise method (model 1). This means verbal language use had positive with no statistically significant effect on diabetes mellitus management practices, hence there was no significant improvement in performance in DMMPs with every unit increase in verbal language use.

4.1.4.2.2. Healthcare provider patient communication (HCPPC) and diabetes management practices (DMMPs) by Hospital

The model was further adjusted for the healthcare provider patient communication variables to determine the independent predictors of DMMPs among patients (model 1) by hospital. Forward stepwise regression method was used to generate the model. Thus, the independent effect of the predictor variables was brought out in the analysis as follows.

Table 14: Model Summary

	R	R Square	Adjusted R Square	Std. Error of the Estimate
M.P.Shah Hospital	0.483[a]	0.233	0.195	11.39921
KNH	0.603[b]	0.363	0.355	12.52436

a. Predictors: (Constant), verbal language use, nonverbal communicative behaviour, noise, environmental context

Source: Field Data (2019)

From table 14, the value of R was 0.483 for MP Shah hospital an indication that verbal language use, nonverbal communicative behaviour, noise and environment context as predictors had influence on diabetes mellitus management practices and that a 23.3% variation of DMMPs were as a result of the four independent variables. The value of R of 0.603 for KNH revealed that the four independent variables as predictors had influence on DMMPs and hence a 36.3% variation of diabetes mellitus management practices were as a result of independent variables. An analysis of variance (ANOVA) was done to ascertain whether verbal language use, nonverbal communicative behaviour, noise and environment context were a significant predictor of diabetes mellitus management practices and the results were summarized as in table 15 below.

Table 15: ANOVA[a]

Clinic	Model	Sum of Squares	df	Mean Square	F	Sig.
M.P.Shah Hospital	1 Regression	3234.988	4	808.747	6.224	**0.000**[b]
	Residual	10655.242	82	129.942		
	Total	13890.230	86			
KNH	1 Regression	27590.145	4	6897.536	43.973	**0.000**[c]
	Residual	48312.731	308	156.860		
	Total	75902.875	312			

a. Dependent Variable: Diabetes management practices

b. Predictors: (Constant), verbal language use, nonverbal communicative behaviour, noise, environmental context

Source: Field Data (2019)

From table 15, the ANOVA finding of [F (4, 82) =6.224, p=0.000)] at MP Shah with the significance value of p=0.000 and [F (4,308) =43.973, p=0.000)] at KNH with the significance value of p=0.000. This depicted that there existed significant influence of the predictor variables of verbal language use, nonverbal communicative behaviour, noise and environment context on the response variable of diabetes mellitus management practices. All the independent variables were then associated to the dependent variable to determine the predictor variables value on diabetes mellitus management practices overtime and this is summarized in table 16 below.

Table 16: Multiple regression model 1 (Adjusted- communication variables) of HCPPC and DMMPs by Hospital

Variable	KNH		MP Shah	
	β (95% CI)	**P value**	**β (95% CI)**	**P value**
Verbal language use	0.05 (-0.10, 0.19)	0.513	0.09 (-0.21, 0.39)	0.552

Dependent Variable: Diabetes mellitus management practices

Source: Field Data (2019)

As in table 16, by hospital, the finding on multiple linear regression model 1 were varied. In regard findings on verbal language use were not statistically significant [β=0.05, (95% CI -0.10, 0.19), p=0.513] at KNH and [β=0.09, (95% CI -0.21, 0.39), p=0.552] at MP Shah Hospital, an indication it did not bring about an enhanced improvement in performance of DMMPs.

4.1.5. Hypothesis Testing.

Ho: There is no significant effect of verbal language use by the healthcare providers and the patients on diabetes mellitus management practices in selected hospitals in Kenya. On simple linear regression verbal language use had significantly positive effect on diabetes mellitus management practices overall in Kenya, at Kenyatta National Hospital and the MP Shah hospital, $p < 0.001$. However, multiple regression model 1(adjusted – communication variables), showed there was positive with no significant effect of verbal language use on diabetes mellitus management practices, p=0.552, overall in Kenya, at KNH, p=0.513 and MP Shah Hospital, p=0.552 respectively, hence the failure to reject the null hypothesis (P>0.05). Therefore, there was no significant effect of verbal language use by the healthcare provider and the patient on diabetes mellitus management practices in selected hospitals Kenya.

4.2. Discussion

National Academies of Sciences, Engineering, and Medicine, 2018, noted that if patients do not speak the language of his or her healthcare providers, multiple adverse effects on the patient's health care might occur. This could be in terms of the patients' inability to understand a providers' diagnosis or treatment plan that could lead to poor patient satisfaction, poor compliance, and underuse of services. The foregoing argument is hence demonstrated in the findings on verbal language use in regard to communication between the patients and healthcare providers (HCPs) during interactions in the management of diabetes mellitus. In regard to findings by gender being insignificant, the overall score ratings on verbal language use at the two hospitals were high, a revelation by the patients of the degree of satisfaction they had for the HCPS.

Nonetheless, comparisons by hospital showed the rating to be significantly higher at MP Shah Hospital than at KNH overall and in all the specific categories except on the component of; the changing in language and word voice as spoken by the healthcare provider was in a way and manner that left patients feeling that they were being attended to well as regards voice inflection. These findings show that patients at MP Shah Hospital were more satisfied and positively agreeable with the nature of communication by the healthcare providers as compared to the patients at Kenyatta National Hospital and were likely to attain better performance in DMMPs, hence glycaemic control with good health outcome. The finding on language is in congruence with the research outcome by Abdulhadi, Al-Shafaee, Wahlström & Hjelm, 2013 on language concordance, which was noted to be associated with decreased communication errors, increased patient satisfaction and adherence with medications and follow-ups. The findings also tend to suggest that the patients were more satisfied with the nature of verbal language use in the communication with healthcare providers at MP Shah Hospital than at KNH. This indicates that HCPs at MP Shah Hospital unlike those at KNH did put in a little more effort in the way they conversed with the patients. Thence, the HCPs at MP Shah Hospital brought out more in their communication on how to manage diabetes mellitus as a condition so as to enable patients understand much better what they were dealing with. As in other past research findings in this area; Partida, 2012 noted that shared language between patients and healthcare providers enabled gathering of information for diagnosis, explaining treatment strategies, and ensuring understanding and joint decision-making. This also meant that the language of communication by the HCPs was at the level of the listener, who is not able to assess the providers' scientific knowledge, but had to understand what was discussed as documented by Kourkouta & Papathanasiou, 2014.

Additionally, the present study does show that there was satisfaction with the verbal language use component of; the healthcare providers encouraged patients to equally participate in the discussion/conversation to the extent they wished during interaction as for the participation in discussion (balanced conversion) between the patients and the healthcare providers with patients at MP Shah Hospital being more satisfied than those at KNH. In his research, Abdulhadi et al, 2007 found that encouraging the patient to ask questions was not only a method of information seeking, but also a mechanism of patient participation in the medical dialogue which is positively associated with patients' satisfaction and health outcomes. The researcher went on to further state that promoting the exchange of information between the doctor and the patient was the main purpose of medical communication and a facilitating mechanism for a patient-centred approach. In regard the theoretical foundation of uncertainty reduction theory avers of information exchange to being a basic human function in which individuals request, provide, and exchange information with the goal of reducing uncertainty. This is ensconced in its interactive strategies, which are dialogic and conversational in nature, together with the passive and active strategies that tend to reinforce dialogue. This is especially so in that with increased frequency of dialogue it builds coalitions between healthcare providers and patients (Bylund, Peterson & Cameron, 2012); it is an aspect of what findings in the present study show on verbal language use. As regard participation in discussion (balanced conversion), in addition to other domains of communication, verbal language use does get appropriate articulation in this theory in enriching communication interactions between the healthcare providers and patients.

However, on the other hand, linear regression analysis showed there was no significant effect of verbal language use by the healthcare provider and the patient on diabetes mellitus management practices in selected hospitals Kenya, hence suggesting that the patients' DM health outcome was nondependent on it. Though there is paucity of data on composite nature of research on the healthcare provider patient communication verbal language use domain as is in this study, there are studies with findings that are comparable. Partida, 2012; Kourkouta & Papathanasiou, 2014 and Hacker et al, 2012 found out in their findings that language concordance fosters diabetes mellitus management practices. Infact Hacker et al, 2012 noted that patients who received 100% of their primary care visits with language concordant providers were least likely to have diabetes-related emergency department visits compared to other groups ($p<0001$) in the following 6 months, suggesting that these groups may have the most to benefit from language-concordant providers, a finding that is well reflected in the current study on verbal language use.

In addition Abdulhadi, Al-Shafaee, Wahlström & Hjelm, 2013 observation support current study outcome and argued that shared understanding of advice and availability of interpreters were elements of support in the consultation and were associated with decreased communication errors, increased patient satisfaction and adherence with medications and follow-ups. The current study findings are therefore in congruence with the other past study findings in the various varying aspects as linear regression analysis demonstrated. By type of hospital, there is no much of information from previous studies specific to verbal language use and DMMPs on the occurrences of better outcome at public hospitals in comparison to private hospitals which is not the case in this study as neither KNH nor MP Shah Hospital was better than the other. Though the case, related past studies on communication were found to largely contrast with this finding. Adhikary, Shawon, Ali, Shamsuzzaman, Ahmed, Shackelford, Woldeab, Alam, Lim, Levine, Gakidou & Uddin, 2018 study found the satisfaction level to be highest among patients for the healthcare givers in private facilities than in the public facilities what mirrors findings on the specific components of VLU. Also Soysal & Yağar, 2017 study determined that in general patients in public institutions had higher level of satisfaction in the level of communication with the doctors which to some extend is contrary to the outcome in the current study.

5.0. CONCULUSION AND RECOMMENDATIONS

5.1. Conclusion

Verbal language use though important was not responsible for improvement in diabetes mellitus management practices performance among patients overtime. In essence, patients would not be said to have achieved better diabetes mellitus glycaemic control and therefore health outcome and if so, then other variables were at play.

5.2. Recommendations

Measures ought to be taken to reinforce and even solidify the already existing strategies on verbal language use to either maintain the current state or make it even much better. It is hence recommended that in regard to the medical practice, professionals and health facilities, conscious awareness of verbal language use by the healthcare providers as well as patients at the healthcare settings be reinforced. This should be anchored within medical practice encounters through information on the same to enable fruitful engagements. To the policy makers'; strategies ought

to be developed to enhance verbal language use especially at health facilities through educational curriculum development and implementation at training institutions with emphasis on effective verbal language use with patients and additionally address deficient areas on the components of verbal language use.

6.0. SUGGESTIONS FOR FURTHER STUDIES

The researcher suggests for an in-depth research on the specific components of verbal language use in both public and private health settings especially regarding the contrasting outcomes by type of hospital and gender. Additionally, further research on the paraverbal aspects of verbal language use is advocated for to complement the current study findings. A qualitative research on VLU is advocated for as it would provide more data that would likely synchronize with the current study findings.

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