



LAUREA
UNIVERSITY OF APPLIED SCIENCES

Prime Mover

**MEDICATION ADMINISTRATION TO DIABETIC CLIENTS OF HELSINKI
DEACONESS INSTITUTE NURSING HOME**

BONAVENTURE ANYE MBE
BACHELORS IN HEALTH CARE
DEGREE PROGRAM IN NURSING
APRIL 2014

**Laurea University of Applied Sciences
Otaniemi**

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The Diabetic clients in nursing care homes are among the most vulnerable members of the society, as they depend on their care home staff for almost all of their entire needs. A combination of complex medical conditions may result in the need to take multiple medications with some taking up to eight medications on average. Medication system in nursing home passes through many steps before it actually reaches the client. This may result in an increase in medication error.

The purpose of this study is to find out how nursing staff of the Helsinki Deaconess Institute Nursing Home administers medication to their diabetic clients. The study also attempts to identify the essentials needed by nursing home staff in the field. It looks at current practices, prevalence of errors, common causes and how they can be addressed through simple, low cost changes in practice, appropriate training and more substantive changes in nursing home systems.

A qualitative approach using mainly in-depth interviews in collaboration with the nursing home of the Helsinki Deaconess Institute, and Helsinki Deaconess University of applied science was aimed at identifying and summarizing the effects of interventions aimed at reducing potentially inappropriate use of medications in nursing homes. A convenient sampling approach was used in selecting four (4) nurses staff who are directly involved as nursing home staff in administering medication to diabetic clients. Direct personal in-depth interviews using the general interview guide method on knowledge relating to the administration of diabetic medication to clients was used in this study and applied through informal conversational interview approach.

The study has shown that there are still some essentials in skills and knowledge to cover. In conclusion, this study contributes to more understanding of administering medication to diabetic clients by nursing home staff and also to the challenges they face in doing this task. The study will help especially as the basis for in-service training for staff and make recommendations for improving services generally.

Key words: Medication administration, Diabetes, Diabetic clients, Helsinki Deaconess institute nursing home.

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1. INTRODUCTION

The records (International Diabetes Federation 2014) show that diabetes has assumed pandemic proportions worldwide and that the disease is a major health concern in many countries. The challenges in managing the disease however have been found to be diverse. In general interventions have failed to control not only the prevalence of this health problem but also its associated complications (Mybanya 2009). A review of the general literature on the disease shows that even though self-care of diabetes at home level is fundamental, institutionalized care remains the major approach used globally for managing the disease. In Finland like elsewhere, a number of nursing care homes has been established for diabetic clients. Diabetic clients in nursing care homes rely on their care home staff for quality services. This is especially because, among other things, the provision of drug therapy to patients is a complex process and like noted by Cohen (2007), medication errors can occur at any step along the way, from prescribing to the ultimate provision of the drug to the patient. It is for this reason that institutional care for diabetic patients becomes very important generally.

However, even in institutionalized care, there are still challenges. Among other issues, the combination of complex medical conditions have led to the need to help clients to keep to regimen in taking multiple medications with some taking up to seven on average. Cohen (2007) observes that medication error can arise at any stage in the process from prescribing to the ultimate provision of the drug to the patient. Cohen points out that the “common causes of medication error include incorrect diagnosis, prescribing errors, dose, miscalculations, poor drug distribution practices, drug and drug device related problems, incorrect drug administration, failed communication and lack of patient education” (Cohen 2007:55-66).

The literature (Svenaeus 1999; Bullington 1999) shows that much has been done in the area of the management of chronic diseases and especially in respect of interventions and the problems in the management of diabetes. Despite these studies, health providers are aware that studies related to quality of care need to be done routinely for monitoring quality of care. Such small scale, in-house studies are not only important for ensuring the achievement of standards, but also serve generally as a step towards setting in-service training objectives for health personnel. Thus in bringing out the strengths, weaknesses and threats in the provision of services (matched against the standards), small-scale in-house studies of this nature as routine activity in process improvement efforts could help to enhance patient safety in a comprehensive way. In this sense, this study is to be seen as part of the monitoring system that seeks to contribute as part of the quality improvement programme.

Jenni (2006) observes that medication administration is a common but important clinical procedure for staff of nursing homes. The effectiveness of the performance of this task however is related principally to the manner in which medication is administered to clients. This determines to some extent whether or not the client gains any clinical benefit, or suffers any adverse effect from the medication. Indeed, for the purposes of enforcing quality of care delivered to clients, personnel are always to be monitored through the use of standards and protocol which serve as explicit measure for service provision generally (Yorkshire and Public Humber 2010). Despite the availability of advanced diabetes medications and measurement devices, the literature suggests that there are some challenges. One of the major concerns for example has been associated with keeping glucose level in balance without keeping it too low. This is especially the case because of the situation whereby most of the glucose control standard for example is intended for young peoples and the need of an elder nursing home resident with cognitive impairment maybe substantially different (Goldenberg et al. 2009). It is in connection with this that small scale studies become important for monitoring medication safety in nursing homes. Staff of these homes administer a key majority of medication and are thus on the frontline of medication safety.

Against this background therefore, the purpose of this study is to find out how the nursing staff of the Helsinki Deaconess Institute nursing home administers medication to their diabetic clients. It attempts to assess the essentials needed by nursing home staff in the field. The study also explores the current practices, prevalence of errors, common causes and how they can be addressed through simple, low cost changes in practice, appropriate training and more substantive changes in nursing home systems. This study attempts to answer the following question: “How do nursing staff of the Helsinki Deaconess Institute nursing home administer medication to their diabetic client?”

2. THEORETICAL FRAMEWORK

2.1 Diabetes

According to Polonsky (2012), diabetes mellitus (diabetes) is “a group of metabolic diseases in which a person has high blood sugar.” Shoback and Gardner (2011) further note that “diabetes is due to either the pancreas not producing enough insulin, or because cells of the body do not respond properly to the insulin that is produced.” Three main types of diabetes mellitus have been documented as follows: Type 1 is said to result from the body's failure to produce insulin and Type 2 is from insulin resistance. Type 3, also called Gestational diabetes, is related to the situation whereby a pregnant woman without a previous diagnosis of diabetes develops a high blood glucose level (ibid). In all cases, the situation results to hyperglycemia or high blood glucose levels (Moore & Griffing 2014).

The records (International Diabetes Federation 2014) show that in 2013 alone, a total of 382 million people have diabetes globally. It is further reported that in 2011, diabetes was the cause of 1.4 million deaths making it the 8th leading cause of death worldwide. The estimates further show that by 2035 there will be as many as 592 million people with this health problem. The greatest number of people with diabetes is between 40 and 59 years of age (cf. Ibid. 2014). This shows that as people age, more and more people will be affected by this disease. No doubt the management of diabetes has become of paramount concern in health care globally (International Diabetes Federation 2013).

2.2 Nursing home diabetic client

In this study, the term client and patient are used interchangeably. The term client in healthcare is most often used as a synonym for a patient who receives health care in an ambulatory care setting, especially when health maintenance rather than illness care is the primary service provided. The term client was used to denote a collaborative relationship rather than a hierarchical one. In this sense, the Oxford English Dictionary was used to define “patient” and “client”. A patient is a person who suffers from an injury or disease. A client on the other hand is said to be a very specific kind of person in a very specific social relation with health providers. As “sufferer” a client attracts recognition of a painful condition and perhaps compassion from people and especially from health workers who play the crucial role of helping the client to manage the health problem (OED 2014).

2.3 Medication administration

Medication administration according to (English Oxford advanced dictionary) is the giving or application of a pharmacologic or other therapeutic agents to prevent disease or any abnormal condition. Accurate medication is necessary to improve quality and ensure patient's safety. Medication administration is a common but important clinical procedure. It is the manner in which a medicine is administered that will determine to some extent whether or not the patient gains any clinical benefit, and whether they suffer any adverse effect from the medicine.

Medications are administered to diagnose, treat or prevent illnesses. Medications can be potentially dangerous even if they are meant to improve health. Therefore it is important that all medications should be taken correctly and always following doctor's instructions (Jenni.2006). Therefore, nurses are required to possess practical pharmacotherapy skills and knowledge about pharmacology in order to safely prepare and administer medications. Nurses administer medications to patients following specialized protocols such as the seven rights of safe medication administration. The original protocol of five rights consisting of right patient, right medication, right dosage, right route, and right time (Lilley and Guanci 1997, McBride-Henry and Foureur 2007) and now extended by right reason (Ruths et al. 2003) and right documentation (Jenni 2006). Right reason means that the medication is administered for the correct indication or diagnosis and excludes inappropriate drug choices for the elderly, and right documentation refers to monitoring patients' reaction to the administered medication (Elliott & Liu 2010).

2.4 Nursing home of Helsinki deaconess institute

According to information from the Helsinki Deaconess Institute website, Helsinki Deaconess Institute started in 1867 with a hospital for 8 patients for the treatment of epidemics since the condition of hospitals in Helsinki at the time was poor. The institute was among the first in Finland to ever employ a trained medical staff. In 1883 they started to create care homes and educational activities, which were finally completed in 1959. At the early 1900s, they founded several hospitals and nursing homes (Helsingin Diakonissalaitos 2009).

The institute began work in areas of children homes from 1912-1914. In 1928, the Elim home was completed to provide home for elderly and peoples suffering from some chronic diseases. In the same year the institute for children was created. From 1929-1949, the institute

founded a school for economic and household management which was later renamed in 1969. In 1972 when the new legislation on occupational health came into force in Finland, the Deaconess institute established a medical clinic for the purpose of occupational health a deal that included several medical centers and health care services. In 1988 a new building for the Diaconia College was completed in the institute complex, same year also saw the introduction of a new form of work in shape of diaconal projects (Helsingin Diakonissalaitos 2009).

The Deaconess institute's welfare work among drug abusers began in Espoo in 1995. Couples of years later, the national telephone counseling services were launched upon the establishment of the drug addiction treatment clinic in Helsinki. In 2000, the Deaconess institute inaugurated the Munkkisaari activities center with activities focusing on drugs abusing welfare work and mental healthcare. A house unit for women who had been living for a long time boarding houses was created and service center for HIV-positive drug addicts also became operational. Today Helsinki Deaconess Institute owns more of such places in and around the metropolitan areas on Helsinki (Helsingin Diakonissalaitos 2009).

Given the relatively small size of the number of communities managed, the institution offers extraordinary degree of service and attention to its client. Unlike larger national management institution, the Helsinki Deaconess staffs are frequently in the field ensuring that the experience of the resident is exceptional and that of their staff are truly supported. Currently, the Helsinki Deaconess institute affiliated communities offer the following level of living like: Independent, assisted and skilled staff specialties in the area of rehabilitation and Dementia. Also unique is the location of the current HDI managed communities which are in urban, suburban and rural location (Helsingin Diakonissalaitos 2009).

The literature review shows that in Finland as in other places, there are regulations and policies put in place for the guidance of service providers in health. These policies are to be enforced through monitoring and evaluations of the activities of service providers generally. It also emphasizes the need for regular updates and refresher training for service providers generally. These efforts are geared towards ensuring that clients of these health facilities are taken care of properly and according to the standards set down by policy. As a human institution however, the literature shows that in many instances there are limitations in implementing the policies to the letter in many health facilities. Such mistakes may be by omission or commission and invariably create challenges for clients. Health providers are aware that in order to keep in line with policy and offer quality of care to clients, there is the need for continuous monitoring of the services as well as knowledge and practices of individual providers. This is not in the bid for fault finding per se, but in the task of finding the necessary point for retraining and safeguarding the health of patients generally (Helsingin Diakonissalaitos 2009).

3. PURPOSE OF THE STUDY AND RESEARCH QUESTION

3.1 Purpose of the study

The purpose of the study is to find out how nursing staff of the Helsinki Deaconess Institute nursing home administer medication to their diabetic clients. The study looks at the current practices, prevalence of errors, common causes and how they can be addressed through simple, low cost changes in practice, appropriate training and more substantive changes in nursing home systems.

3.2 Research question

The research question for the study is “how do nursing staff of the Helsinki Deaconess Institute nursing home administer medication to their diabetic client?”

4. METHODOLOGY

4.1 Qualitative research method

The research method for this study is qualitative. Qualitative research method is that research method which deals with the analysis of data got from direct fieldwork observation, in-depth open ended interviews and written documents. Qualitative research method engages in naturalistic inquiry, studying real world setting inductively to generate rich narrative descriptions and construct case study. Qualitative research always aims to get a better understanding through firsthand experience, truthful reporting and quotations of actual conversations. It aims to understand how the participant derive meaning from their surroundings, and how their meaning influence their behavior (Michael Quinn 2005).

Qualitative research may also use observation as the data collection method. Observation can be defined as the selection and recording of behaviors of people in their environment. Observation is useful for generating in-depth descriptions of organization or events, for obtaining information that is otherwise inaccessible, and for conducting research when other methods are inadequate (Holloway and Wheeler 2001).

Qualitative research method involves analyzing data from direct fieldwork observations, in-depth, open-ended interviews, and written documents. Qualitative research engages in naturalistic inquiry, studying real world settings to generate rich narrative descriptions and construct case study (Michael Quinn Patton 2005). This study employs Thematic Content Analysis as the basic tool for the analysis of data.

4.2 Thematic content analysis

Braun and Clarke (2006:79) define Thematic Content Analysis as “a qualitative analytic method for identifying, analyzing and reporting patterns (themes) within data. It minimally organizes and describes a given data set in detail. On the other hand, Rosemarie Anderson (2007) noted that thematic content analysis is a descriptive presentation of qualitative data (in form of interview) collected from research participants or other textual data. The (free encyclopedia) also defines thematic content analysis as the most common form of analysis in qualitative research that emphasizes, pinpoints, examines, and records patterns or themes within data. Themes are patterns across data sets that are important to the description of a phenomenon and are associated to a certain research question. The themes then become the categories for analysis.

Thematic content analysis is performed in process of coding in six phases to create and establish meaningful patterns. The phases include data generating initial codes, searching for themes among codes, reviewing themes, defining and naming themes, and producing the final report. Thematic content analysis was therefore the method for this study because of its strength in portraying the thematic content of the interview by identifying common themes in the text provided for the analysis.

In this study, the process began by playing the tape that was used to record the interview and the information carefully written down on a paper. Four copies of the interview transcripts were made. The data was carefully read through couple of times to familiarize with the data and then with a highlighter all descriptions that were relevant to the research topic were highlighted. From the highlighted area, each distinct unit of meaning were marked, cut out and similar units were put together in a pile. Each pile of unites were then labeled as initial category using key words copied from highlighted text. Reading once more through the entire interview transcript, identifying distinct units, grouping and regrouping similar and dissimilar units and relabeled categories. Reading through all meaning units per category and redistribute units as appropriate, relabeled categories as appropriate. The entire processes finally generate clear definitions and names for each theme.

4.3 Informants

The preference in choosing the informants for the research was both determined by the researcher and the ethical committee of the Helsinki Deaconess's University of Applied Science. For the purposes of good communication between the researcher and the informants, the committee agreed that this study should be conducted in English. The informant must possess a good command of English, to ensure that he/she understands the questions and be able to answer. Apart from this, the informant is to be actively involved in medication administration. These reasons therefore limited the informants to service providers who can speak English and are frontline service providers. Clients were not included in this study. In all, a total of 4 informants were purposively selected for this study. These 4 personnel are frontline service providers and therefore are always on the job in the daily routines of providing medication to clients.

4.4 Data collection

To gain the goal of the study, an interview guide (see appendix 1) as well as an observation check-list was created out of the standard protocol to match with the research question. The questions were carefully considered and designed to bring the most valuable information. Using this approach for the 'guided conversations,' gives voice to the interviewees' thoughts

and opinions. Therefore, the interpretations and meanings given by interviewees to the subject of concern become the central issue and data for analysis. But such data were collected in the context of conversations because meanings often arise from interaction (Hirsjärvi and Hurme 2004: 48).

The advantage of the conversational approach for this research was the possibility to ask and receive information from the respondent about their experiences and opinions which would not have been quite threatening using other formats. This approach gives the researcher information from the respondent on first hand experiences and opinion about the topic. The great advantage of an interview as opposed to other form of data collection is that the researcher can regulate the collection of materials in a flexible manner depending on the situation (Hirsjärvi 2003: 192). Interview provides concrete answer and in many directions. Interview also gives the researcher an advantage to clarify answers (ibid. 192).

4.5 The interview process

In this study, face-to face conversations were used on individual basis. Four respondents respectively participated in the study but the interview was carried out separately. Among those four respondents, two of were nurses while the other two were practical nurses. Depending on the respondents, a chosen date and time was arranged for the interview. Each of the interviews took place in a chosen private environment. Interview materials include a tape recorder, a pen and note book. Before each interview, a consent form was filled, the research question and aim of the study was explained to the informant. Then the interview (mainly through the conversational approach) was conducted using the research guide. As already explained, the guide was prepared in line with the standard protocol for service delivery. The answers were tape-recorded and some important points written on note book. In this approach, the researcher is the listener and only spoke where there was the need for some more clarifications. Generally, informants were very positive and quite relaxed in these conversations. After all the interviews were conducted, the tape was then played and the information retrieved as the main data for analysis.

4.6 Data analysis

Data was analyzed using thematic content analysis. The process began by playing the tape that was used to record the interview and the information carefully written down on a paper. Four copies of the interview transcripts were made. The data was carefully read through couple of times to familiarize with the data and then with a highlighter all descriptions that were relevant to the research topic were highlighted. Because the analysis was inductive approach, themes were allowed to emerge from the data themselves. Criteria for the

relevant were descriptions related to thesis question and those that could help answer the research question. From the highlighted area, each distinct unit of meaning were marked, cut out and similar units were put together in a pile. Each pile of unites were then labeled as initial category using key words copied from highlighted text. Reading once more through the entire interview transcript, identifying distinct units, grouping and regrouping similar and dissimilar units, and relabeled categories (see Fig. 1-5). Reading through all meaning units per category and redistribute units as appropriate, relabeled categories as appropriate. The entire processes finally generate clear definitions and names for each theme (see Fig. 1-5).

Question 1-4

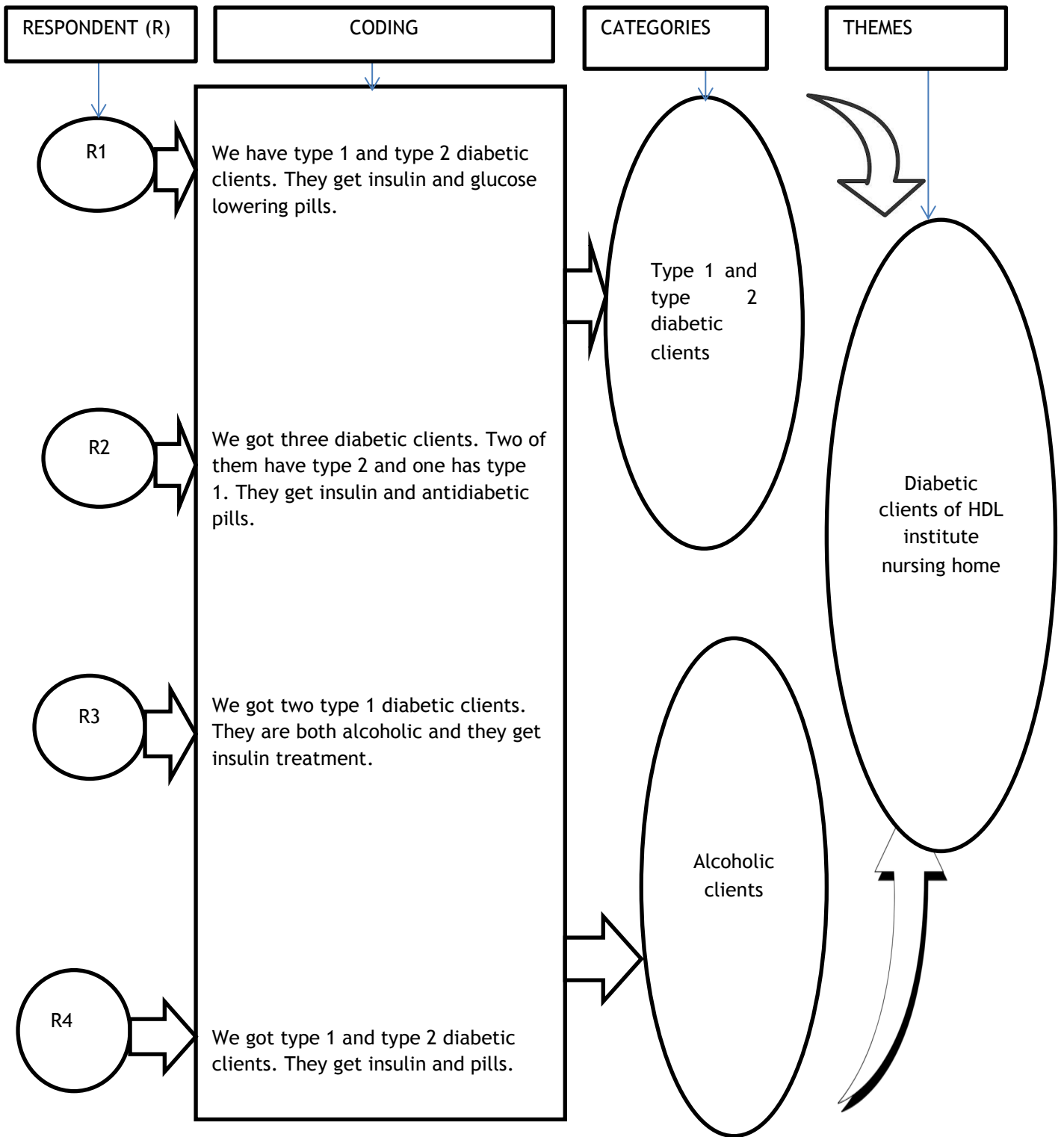


Figure 1. Theme derived from question 1 to 4 (see appendix 2).

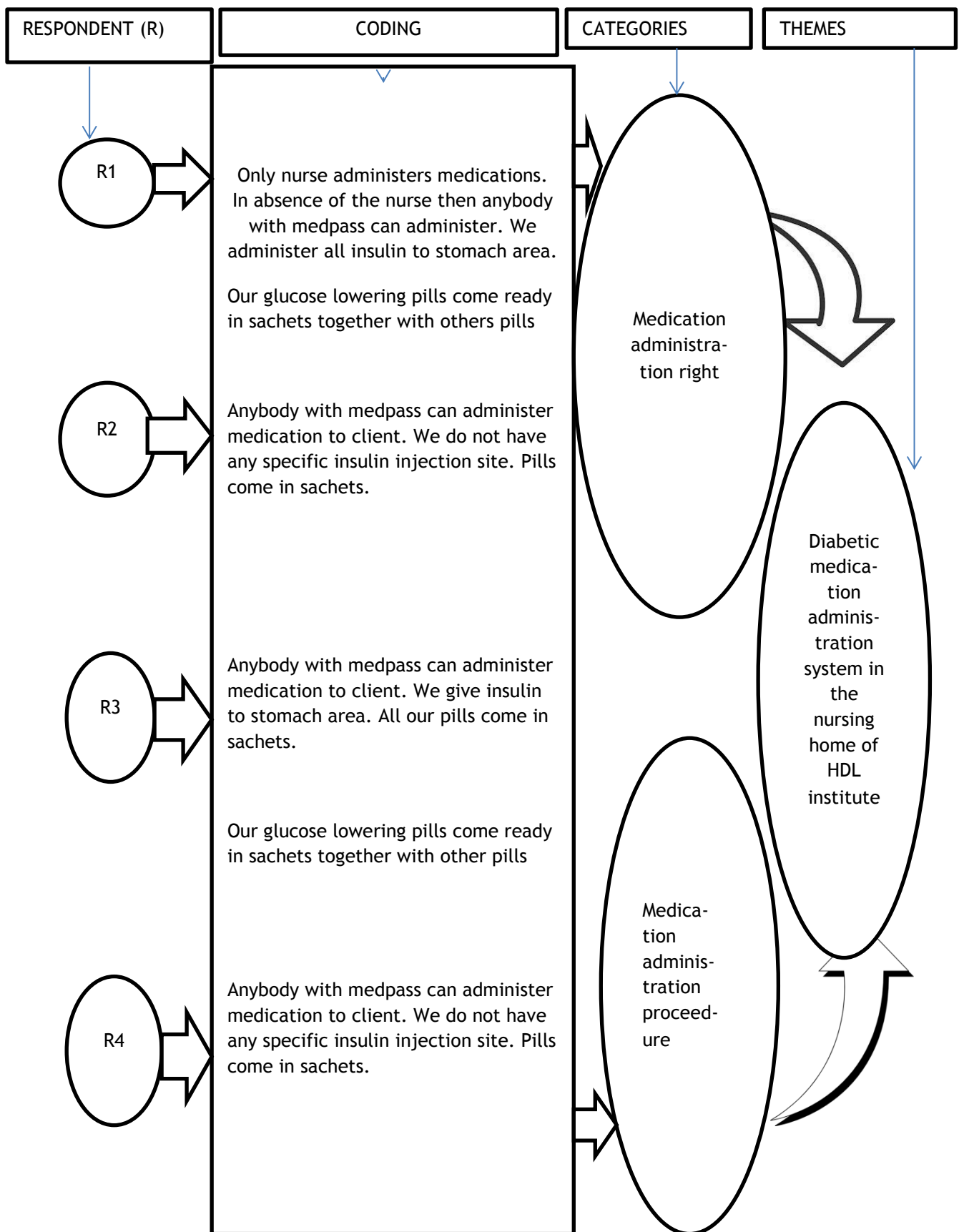


Figure 2. Theme derived from question 5 to 6 (see appendix 2).

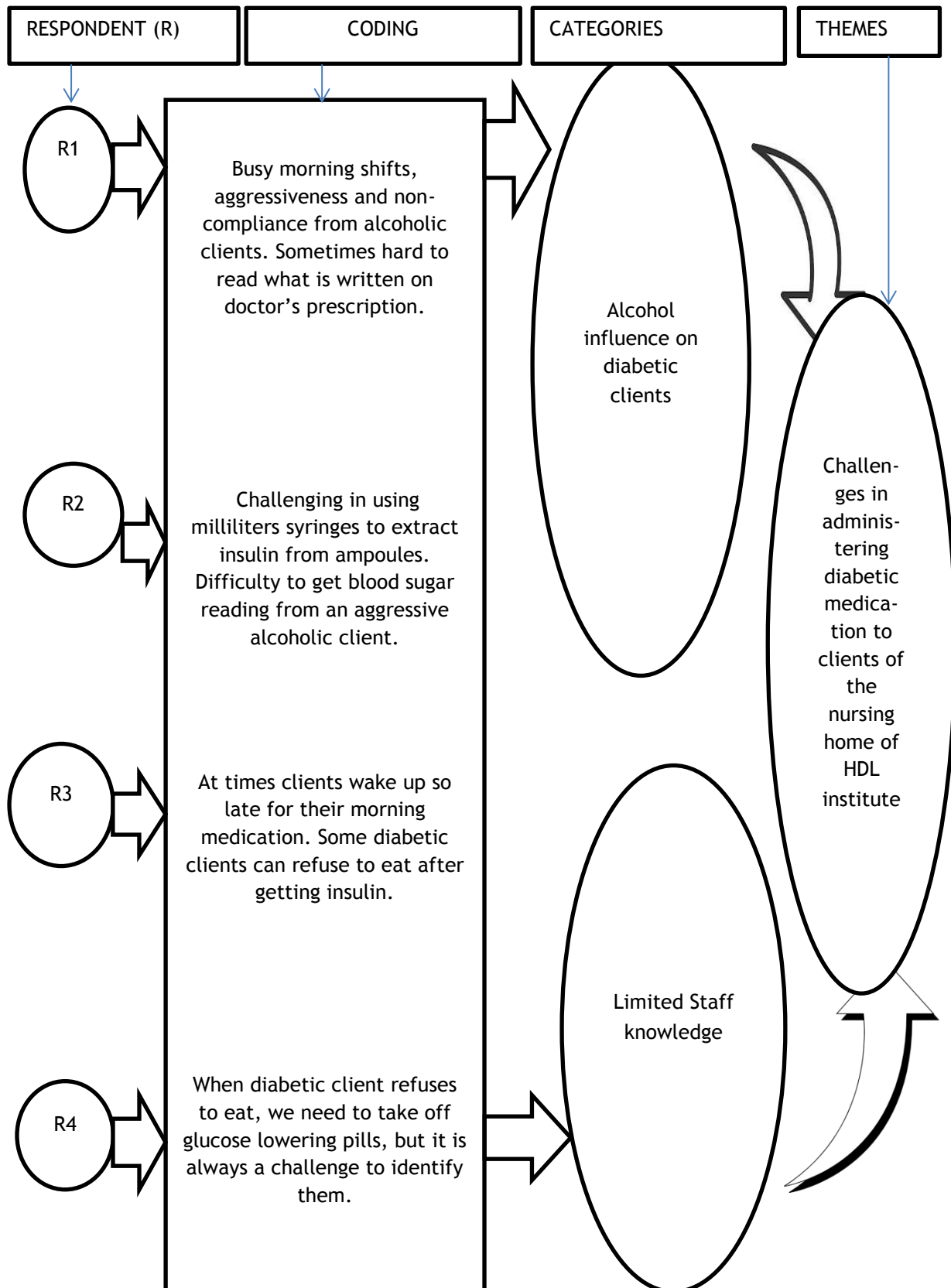


Figure 3. Theme derived from question 7 to 9 (see appendix 2).

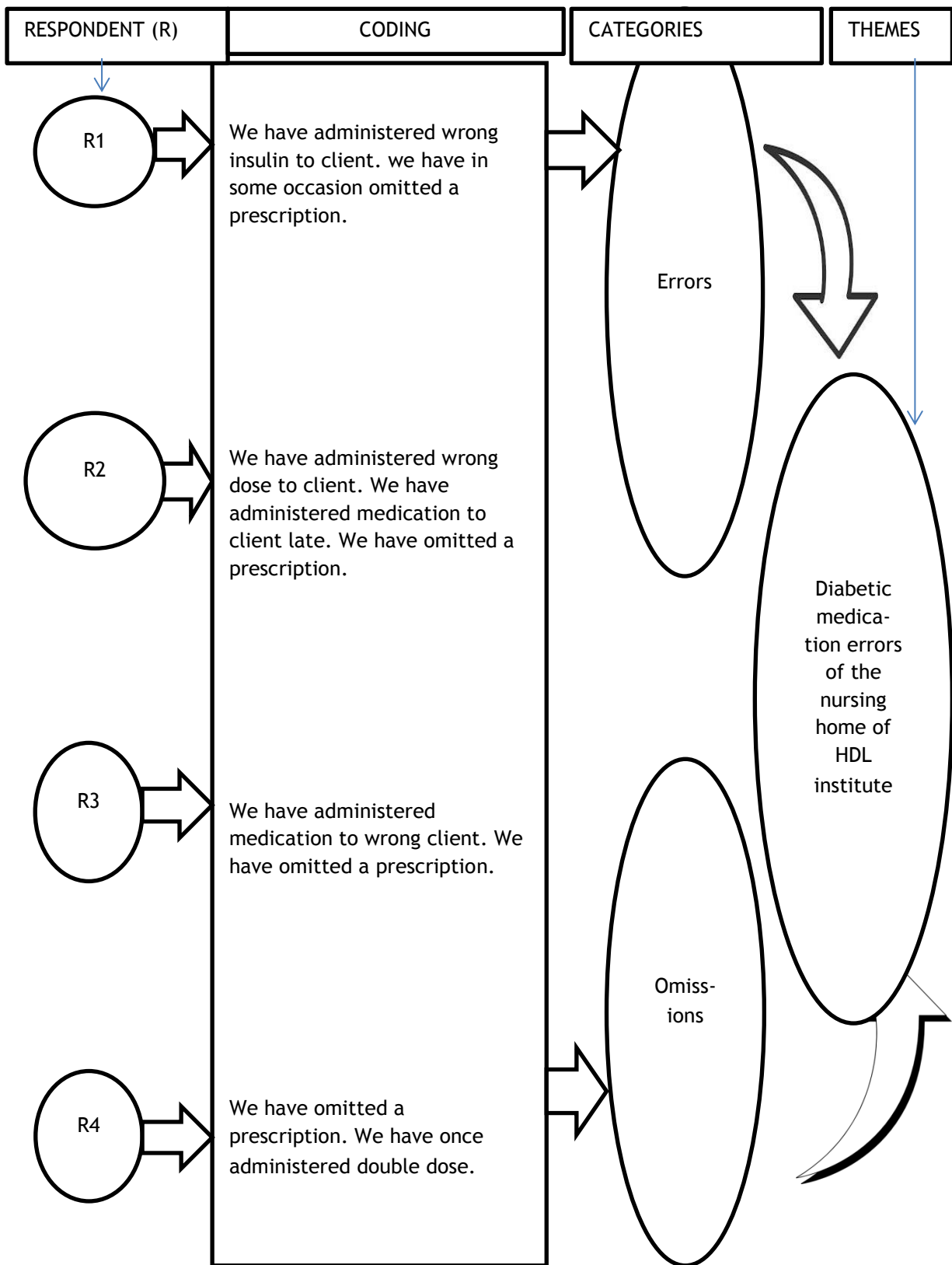


Figure 4. Theme derived from question 10 (see appendix 2).

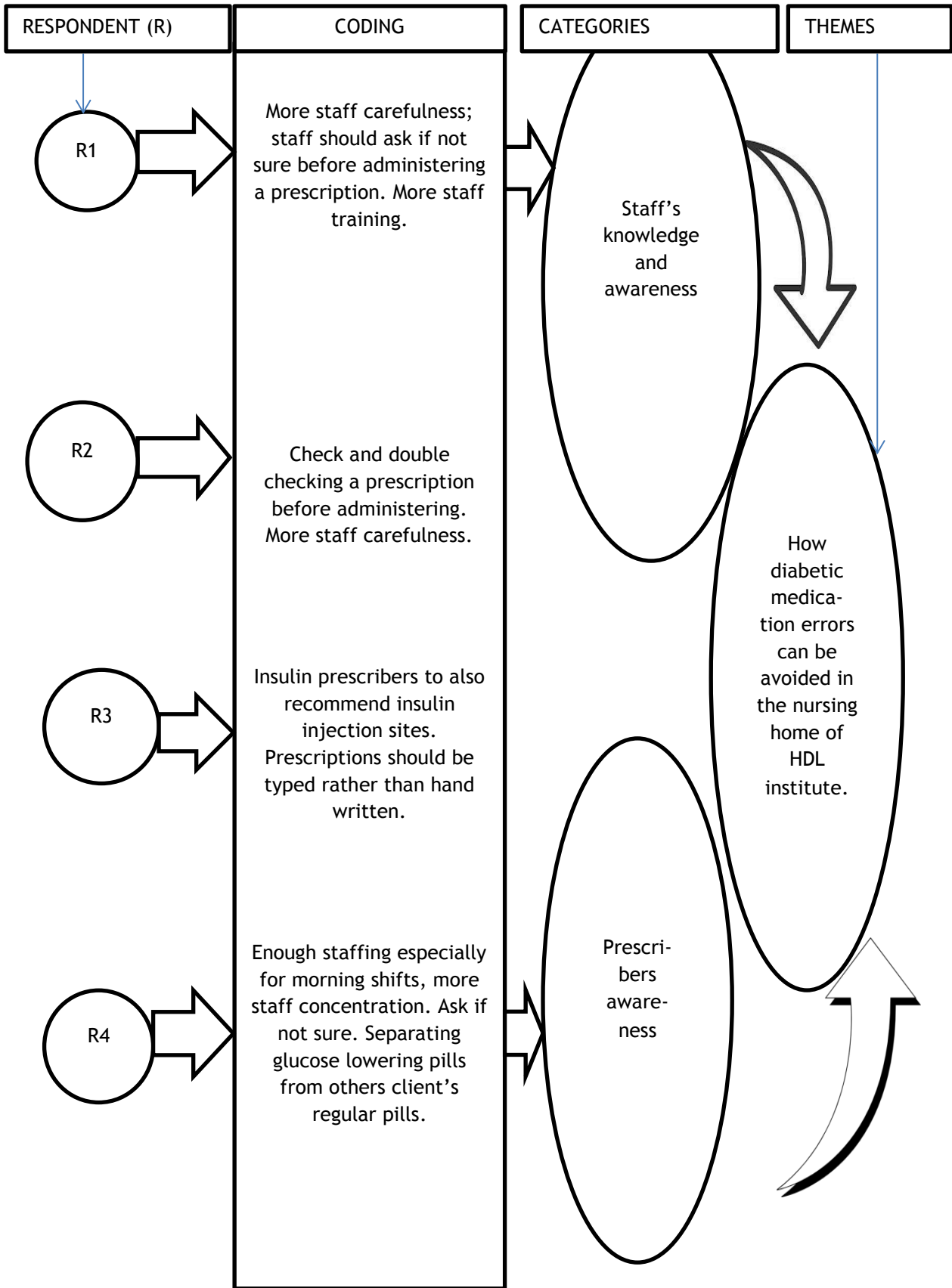


Figure 5. Theme derived from question 11 (see appendix 2).

Figures 1-5 contain the raw data from the four interviews. The coded data (Fig 1-5) contain highlighted relevant items identified from the raw data during the process of coding. The coded data was further regrouped into categories (Fig1-5). The themes finally emerged from the categorized items (Fig 1-5). This process began by reading over and over the raw data obtained from the interview and identifying relevant items which could be useful to answer the research question. The relevant items were marked and highlighted as coded data. From the highlighted area, each distinct unit of meaning were marked, and cut out. Similar and dissimilar units were put together in their respective piles. Each pile of units were then labeled and identified as initial category using the keywords copied from highlighted text. The themes were then derived by defining each group of categories.

5. FINDINGS

Following data analysis, five themes were derived from the entire process. These include: Diabetic clients of the nursing home of HDL institute; diabetic medication administration system in the nursing homes of the Helsinki Deaconess Institute; diabetic medication errors in the nursing home of the Helsinki Deaconess Institute; challenges in administering diabetic medications to clients of Helsinki Deaconess Institute nursing homes and how diabetic medication errors can be avoided in the nursing homes of the Helsinki Deaconess institute.

The aim of the study was to examine how nursing staff of the Helsinki Deaconess Institute nursing home administer medication to their diabetic clients. The study also explores the current practices, prevalence of errors, common causes and how they can be addressed through simple, low cost changes in practice, appropriate training and more substantive changes in nursing home systems.

5.1 Diabetic clients of the nursing home of HDL institute

Discussions with service providers gave some general characteristics of clients of the Institute. Findings show that diabetic clients of the unit are of the age between 40 and 70 years. This suggests that diabetic patients are comparatively older people and therefore have other complications. For example, the findings show that some of the diabetic clients also have alcohol history. Some also have other complex medical complications including dementia, epilepsy, cardiovascular disease, respiratory disease and obesity. Thus the challenge facing health providers in this center are multi-faceted and therefore in most cases, a comprehensive approach is needed to meet the needs of individual clients at the center.

5.2 Diabetic medication administration system in the nursing homes of the Helsinki Deaconess institute

The system begins with the prescriber (Doctor/physician), the pharmacist, the nursing home staff and then the clients. Glucose lowering pills are dispatched into medication boxes by staffs, or they can come already in sachets from the pharmacy. Among the glucose lowering pills in the sachets are others regular medication which the clients takes. The sachets clearly

bear the client's name, date and time for the medication. All the staffs need is to give to the right client at the right time. This system is quite easy for the staffs and safe for the client.

However, this is not always the case. For example with the administration of insulin, the process is different because there is no constant dose. Insulin is prescribed by the physician after evaluating the client's blood glucose pattern. The prescription comes alongside with administration instructions. Insulin may come in insulin analogs/pens, or in ampoules. The doses are given depending on the level or pattern of glucose level. The staff needs to measure the glucose level each time before insulin is administered. In most cases, the basal insulin has a constant dose for a period of time, while the short acting insulin is given depending on glucose measurements. The administration process starts by measuring the plasma glucose, then following physician's order the dose is dialed (if from pen) or withdrawn from ampoules with insulin syringes and administered. The blood glucose measurement and the administered insulin dose are then documented.

5.3 Challenges in administering diabetic medication to clients of HDL Institute nursing homes

The early part of findings suggests that there was some kind of relationship between the client's medical health and medication administration. Most nursing home residents already have a variety of medical complication including: ageing, dementia, drug abused, alcohol and mental health problems. This makes the process of medication administration more challenging to the nursing home staff. However, safe practice is the standard that should be kept closely. Dickens (2007:103) is of the opinion that there should be adequate staffing to ensure that there is sufficient available time to conduct medication administration safely.

Three out of the four respondents, deal with alcoholic clients. Only one of the respondent deals with alcohol-free clients. All the respondents who had alcoholic clients admitted the challenges in working with diabetic alcoholic clients. Among the problems they stated include: non-compliance by the client, aggressive, difficulty to administer medication in time due to late wake up, irregular blood sugar fluctuations due to alcohol, and inability to eat after taking insulin.

The finding also shows that there was no big problem about administering the glucose lowering agents, but one of the participants talked about the consequences of mixing glucose lowering pills with other pills. She stated that at times, when a diabetic client refuses to eat due to overnight consumption of alcohol, the glucose lowering pills need to be withdrawn from other pills. But the process is always challenging to identify which pill is which, could be glucose lowering agent or some other basic pill.

5.4 Diabetic medication administration errors of the nursing homes of the HDL institute

Almost all the participants admitted the use of insulin, and the most common types were Lantus (long acting) and Novarapid (short acting). When asked site of insulin injection, the answer was “we inject all insulin to stomach area”. And one of them said “am just getting pissed off because everybody inject where ever, I really wished insulin prescribers could also recommend injection site. In the interview most respondent admitted that “we have on some occasions administered wrong insulin to clients”, “at times we forget to give”, “and once we gave wrong dose”, “sometimes we gave so late”.

The findings show that the diagnostic coding guidelines have not always been followed. For example, findings show that the use of abbreviations such as “U” or “IU” for units. If the abbreviation is added to the intended dose, the dose may be misread for example, 10u to be 100.

5.5 How diabetic medication administration errors can be avoided in nursing homes of the HDL institute

When asked views how medication errors can be prevented in the nursing homes, almost all the participant proposed measures which were the same. “I really feel more education to staff can solve the problem”, “ check and double checking insulin before injection can help” another respondent stressed that “ am just disturbed because here everybody inject insulin where ever they like, I think it will really help if doctor who prescribe insulin also recommend injection site”. Others felt that medication errors can be prevented by, always asked if not sure, separation of glucose lowering agents from others pills, avoiding use of non-insulin syringes in nursing home. Two respondents actually proposed changes in acquiring medication passport.

6. DISCUSSION

The purpose of the study was to find out how nursing staffs of the Helsinki Deaconess Institute nursing home administer medication to their diabetes clients. The findings could help to acquire knowledge on the topic, evaluate current practices and make recommendation for change. Ten semi-structured interviews questions (see appendix 1) were created to match with the research question. The questions were carefully considered and designed to bring the most valuable information. The questions were grouped into categories and later four subcategories were used to answer the main research question. Four participants from different nursing homes of the Helsinki Deaconess Institute participated in the study to help answer my research question. The research question for the study was: “how do nursing staff of the Helsinki Deaconess Institute nursing home administer medication to their diabetes client”.

The reason for choosing this topic stems from a clinical practice in a diabetes ward. During this period considerable observations were made, especially in terms of how the hospital nurses have the knowledge and experience in handling diabetes and its medication unlike their counterpart in nursing home. Secondly, diabetes mellitus now exists in epidemic proportions around the world, It is in connection with this that small scale studies become important for nurses to monitor diabetic medication safety in nursing home.

Medication system in all nursing homes passes through several steps before the actual administration to the patient (Lilley and Guancy 1998a), which increases the possibilities for errors (Edwards 1997, Ahmed and Hamrah 1999b, McBride-Henry and Foureur 2007, Warn 2007). Significant responsibility in keeping the nursing home clients safe during medication administration is the responsibility of the nursing home staff. A lot of medication errors involving diabetic medication have been reported frequently in the literature (Sheu et al. 2008; Cox and Ferner, 2009; Brady et al, 2009; NHS Information Centre (NHS IC), 2011). Diabetic medication is considered as one of the high-risk medication; it is necessary to regulate blood sugar levels and prevent hyperglycaemia or ketoacidosis, yet if given in error, can also cause hypoglycaemia or coma (Cox and Ferner, 2009; Lamont et al, 2010). However it is for this reason that errors involving insulin are often severe.

When comparing with regular insulin, rapid acting analogs are faster in action and shorter duration reaching higher peaks levels and achieving their peak much closer to administration time. They are designed to be taken ten to twenty minutes before meal. When compared with basal insulin analogs which have a prolonged duration of action without a pronounced peak.

The respondent in this study also admitted their challenges such as “aggressive alcohol clients” “client refuse to eat after insulin has been administered” “sometimes clients drop glucose lowering pill on the floor when we don’t have a replacement” “sometime we need to take off glucose lowering pills when client refuse to eat, but we find it hard to identify them from others pills in sachet for example”. All the respondents who work with alcoholic clients stated that alcohol fluctuates blood glucose and lamented a numbers of times they have found their client in a state of hyperglycemia.

Dickson (2007) analyzes challenges faced by nursing home staff when administering diabetes medication to clients. They include: confused clients do not understand that they need to take medication, difficulties in swallowing medication, having to administer a large number of medicines to one patient at same time, patient refuse to eat after receiving insulin, patients who become aggressive during insulin administration and blood sugar measurement, clients who are aware of crushed medications, complex prescription with frequent dose change, clients who do not want to wake up in time for morning medications, difficult in reading doctor’s hand writing, difficulties in withdrawing insulin from ampoule and busy morning shift when haven to complete many task at same time.

The finding suggests that at least all the respondents admitted some kind of medication incident / errors, which include: omissions, wrong dose, wrong insulin use, and wrong timing. But generally such errors were rear. Informants however noted that most of the errors are made during the busy morning shifts. The finding is also common in the literature. Hughes, Wrigh and lapane (2006) suggest that medication administration in the first half of the day (7am to 2pm) is twice as likely to give rise to errors as medication administered in the evening. The reason for this is unproven but common sense suggests that the mornings being a busier part of the day may have relative challenges.

Lack of knowledge related to the disease can lead to inappropriate management and medication errors. Some studies in the USA have found conflicting evidence about whether the level of qualification of care home staff has any influence on medication errors. However, a study in Dutch care homes found that care home staff with more experience also makes errors. Another recent study in the USA found that in assisted living, workers with better training had only half the medication administration errors rate of those that were less trained (CPA 2012). Literature has also shown that medication errors happen at every step of drug therapy, but most frequently during drug administration.

The National Patient Safety Agency (NPSA) in 2007 in its study that examined medication in care homes found that errors were widespread in prescribing, documentation and administration of medications, and estimated that 70% of all medications had errors. For

residents requiring anti diabetic medication to manage blood glucose, errors can have devastating consequences. Medication errors, involving either oral hyperglycaemic medication or insulin, can be associated with patient harm or death. Owing to the high risk of harm associated with medication errors

As professionals, nurses possess practical pharmacotherapy skills and knowledge about pharmacology in order to safely prepare and administer medications. Nurses who work in these care centers are therefore trained professionals and therefore have had tutoring in administering medications to patients following specialized protocols. Warn (2007), observes that nurses provide medications to patients following specialized protocols such as the seven rights of safe medication administration. According to Warn, this protocol had expanded from five rights consisting of “right patient, right medication, right dosage, right route, and right time (Lilley and Guanci 1997, McBride-Henry and Foureur 2007) and now extended by right reason (Ruths et al. 2003) and right documentation.” It is further explained that “right reason” should be understood in the context of administering “the medication for the correct indication or diagnosis, and right documentation refers to monitoring patients’ reaction to the administered medication. Also checking and double-checking of medications before administration” (Lilley and Guanci 1997, 1998a; Ahmed and Hamrah 1999a).

In most cases, medication errors are a result of miscommunication service providers including physicians, pharmacists, and home care staff. To forestall this, efforts at eliminating communication barriers are important and drug information should always be verified. The suggestion Anderson (2010) is that, in order to promote effective communication among team members, the background, assessment, and recommendations method also known as “SBAR” should be used. In addition, it is recommended that nursing home staff and healthcare organizations should ensure that all medication are provided in clear unit dose packages for institutional use. Packaging for many drugs looks similar. A tragic case stemming from such similarity occurred with insulin, which is one of the drugs on the JC’s “High-alert” list, meaning it has high potential for causing patient harm.

Look-alike or sound-alike medications that can confuse because their names look alike or sound alike are a source for errors. According to the American Association for Medicine (2008), a total of 25,530 such medication errors were reported between 2003 and 2006. The reporting program was jointly operated by the US pharmacopeia, ISMP and MEDMARX (an adverse drug even database). The JC requires healthcare institutions to identify look-alike drugs each year and have a process in place to help ensure related errors do not repeat (ISMP 2008).

The Institute for safe medication practice (ISMP) has included diabetes medication such as insulin among the High Alert medication. Medications appearing on the list represent increased risk of causing significant harm if used in error. However, special safeties to reduce the risk of such errors associated with these medications are recommended including measure to improve access information about the drugs ordering, storage and administration.

The literature (Dickens 2007) suggests that errors in the administration of insulin by nursing home staff are common, and in some cases they may be dangerous and can cause death. Errors can be categorized according to the main contributing factor. Four main types have been categorized as mistakes, slips or laps, violation and latent errors (Reason 1990; McDowell et al. 2009). However as noted by Haas Linda (2012), there is the inherent difficulty of assessing the situation, whether an error is through lack of knowledge, a slip or lapse owing to a distraction or a deliberate violation for a sound clinical reason. To make a good judgment of the situation, the health professional who is said to make the error should clearly state the contributing factors that influenced the choice of medication. Outside this, it may be difficult to ascertain the situation.

According to Cohen (2007), even though medical providers (including physicians, nurses and pharmacists) are professionals trained to deliver “error free” health care, as a human institution, medication errors still do occur. This situation however may not be deliberately committed by these professionals.

The Institute of Medicine, Committee on Identifying and Preventing Medication Errors (2007) observes that medication errors are one of the most common medical errors that affect over 1.5 million people annually. The records further show that at least a total of \$3.5 billion a year is the extra medical costs of treating drug-related injuries occurring in hospitals alone. But this estimate does not take into account remunerations and productivity or additional health care costs. These records go to emphasize the need for efforts towards continuously ensuring good monitoring systems and also that such monitoring system is fed into refresher training programmes for health providers.

Another important element in preventing medication errors is the perfect medication storage, stock, standardization and distribution system (Anderson 2010). It is observed that this will prevent errors by decreasing availability of floor stock medications, restricting access to high alert drugs, and distributing new medications from the pharmacy in a timely manner. Nursing staff can also reduce drugs errors by use of preprinted order sets and a standardized formula. This measure helps to correct dosing regimens, routes, and parameters while eliminating ambiguous abbreviations and risk of misreading a prescriber’s handwriting (Anderson 2010).

The CPA (2012), also suggest that adequate education to nursing home staff can reduce the risk of potential inappropriate medication incidence. Although medication system in the nursing homes passes through a series of stages before it actually reaches the clients. From prescriber, to pharmacist, to nursing home staff, and then to the clients. Mistakes can happen in each of the stages, but most often is between the nursing home staff and the client. Therefore the nursing home staffs are the forefront in the fight (CPA 2012). Pills identification is very important but challenging practice in within nursing home staff (CPA.2011).

One thing mentioned by informants generally was medication passport (med pass) and another was medication errors report which is quite unique to the Helsinki Deaconess Institute. These are very good policy and not quite common with some other nursing homes. Helsinki Deaconess Institute has adopted this policy to deal with medication errors. Med pass is needed in order to administer medication in any of the nursing homes of Helsinki Deaconess Institute. Med passes can be obtained from every ward, the process involves three successful times of dispatching medications and or injecting insulin under the supervision of a nurse. The nurse will then sign the form which must be later confirmed by the doctor. Med pass are specific or valid only for a particular ward or organization. This means, a staff might need another med pass when she or he moves to another place.

Helsinki Deaconess Institute has also introduced the policy to report all medication errors in all its nursing home. Their Medication report forms can be found in hard copies and or online. If a staff makes a medication error, he/she needs to complete the form by writing or online. The forms ask details about the errors and even seek opinion how it could be avoided. Omissions of medication are also considered as medication errors. This is an excellent idea which others nursing homes around the world need to follow.

6.1 Ethical considerations

Various studies (Eskola and Suoranta 1998: 211-212) have shown that the concepts of validity and reliability employed in quantitative research are not applicable when analyzing the reliability of qualitative research. There is a general consensus that qualitative research is centered on the open subjectivity of the researcher. The researcher acts as a main research instrument, thus the most suitable standard in determining the reliability and validity of the research. In a study, Hirsjärvi et al. (2007: 227) do not consent to the fact that the reliability and validity can well be examined when all the details related to the research process are stated clearly and truthfully. Hence, the reader will be capable in assessing the research and its results independently (Eskola & Suoranta 1998: 211- 212). In order to give the reader the chance to evaluate the reliability and validity of the study and for easy verification, the

various stages of the research process are described in a chapter consisting of material and methods. The interviews were conducted in English and the report written in English to add more credibility to the validity and reliability.

Since the participants in the study were nursing staffs and not clients, the ethical principles of this study concern mainly the collection and handling of data and the publication of the results. The participants approved consent was essential and they were made aware of the possible risks. When collecting the data, the participant's anonymity has been protected. The data were appropriately and confidentially recorded.

The Ethical Committee of Helsinki Deaconess Institute has set clear instructions on the principles for all research implemented in cooperation with the Institute. All research projects must respect the principle of human dignity and integrity. The participant's wellbeing is essential to all research and all possible risk and harm must be prevented at all cost. The participants were asked for a written consent on participation (Appendix 2). They were made aware that the participation is voluntary and that refusal or suspension does not affect their services. (Lausunnon hakeminen eettiseltä lautakunnalta 2009.) Research permit was applied for in early august 2013 from the ethical committee. A month later, the committee granted the ethical permission to me.

The ethical committee of the Helsinki Deaconess University of Applied Science recommended the studies to include at least four or more participants as opposed to three which was arranged, so as to give a better grant for my findings. Somehow, for ethical reasons, they recommended that all the participants must be English speaking. This was to ease communication barriers and also to make sure the information given was real. It wasn't that all easy to get more English spoken participants.

In order to assure ethicalness, the interviews or interviewees were not discussed with any outsiders, exceptions being the study seminars. All collected and printed material alongside the form of consents was stored separately so that they could not be linked and hence clients recognized. Material that might lead to recognition of a particular client was excluded and focus was on presenting the data in the matter that secures the interviewees' identity. All material was handled with grave confidentiality and email was not used in order to avoid material falling into wrong hands. After receiving the final evaluation for this study, all material was destroyed. Printed documents were fed to a shredder and recordings were deleted.

6.2 Trustworthiness

With respect to trustworthiness, Patton (2002) noted that the principle of trustworthiness describes situations where research data is based on critical argument. It is centered on the accuracy and sincerity of the researcher in understanding and reporting the view points, experience, thoughts and intentions. Thus, the main factors determining trustworthiness in qualitative research are reliability and validity (ibid. 2002)).

The reliability of this study takes its root from the planned and reliable relationship between the researcher and the participants. The fact that written consent letter was sent to the participants in time, the research topic, aim of the study, their ethical rights, and the anonymity of the participants was assured by not asking any of their detail information, were all important factors to influence the participant ability in giving the truthful and reliable information.

In this study, the methods and theory were chosen with according with the purpose research. Therefore the reliability and validity of this study can also be evaluated through the research method based by observation and carefully designed opened ended interview questions. The validity of the well organized and protected interview is based on the quality of the sample, the cognizance of the participants, the length of the interview, the language of the interview and the motive to be honest.

The data was collected from four participants who were carefully chosen. The criteria for choosing the participants were based on some factors as experience, competent and reliability, and good command in English. Therefore the data reported on this study is reliable and credible.

7. CONCLUSION

Nursing home care residents with diabetes solely rely on the competence of the nursing home staff for many of their needs including medication administration. Medication administration is a common but important clinical procedure for all health care providers including the nursing home staff. It is the manner in which a medicine is administered that will determine to some extent whether or not the patient gains any clinical benefit, or whether they suffer any adverse effect from the medicine (Jenni 2006). The responsibility in keeping the nursing home clients safe during medication administration lies on nursing home staffs' shoulders. The administration of medication in nursing homes in many countries around the world is currently covered by regulations of the health and social care Act, and compliance is monitored by the care quality commission. (Chum 2008)

Medication errors are one of the most common types of medical errors that occur in health care institute and nursing homes (Choo, Hutchinson & Bucknall 2010, 855). It is not possible to ignore the importance of the issue as research has shown that medication related problems can have a negative impact on patients as well as nursing home staff. Therefore medication safety is an important skill for nursing home staff and their providers who must understand the various procedures in the medication process to assure their clients safety.

Although the entire medication system in nursing homes goes through series of steps such as the prescriber, the pharmacist, nursing home staff and clients, it is the duty of the nursing home staff to ensure that adequate system for managing, administering and monitoring medication are in place and review of medication system by others professionals may help to identify any incidents h(CHUM.2008).

According to (Chum 2008), no Medication administration errors are intentional, and errors can arise either from a system failure or from a lack of appropriate knowledge or stress and tiredness on the part of the staff. Appropriate knowledge can be got by more staff education and tiredness and stress can be reduced by appropriate levels of staffing. However even well train and knowledgeable staff can occasional make mistakes with medication.

The issues raised in this studies that highlight measure in which system can be strengthened to help staff avoid errors and assure better medication system include: More staff concentration, a good communication between staffs. More staff education, more staff carefulness and awareness on medication errors, insulin prescribers to recommend injection site, more insulin injection techniques training to staffs, implementing check and double checking to high alert medication such as insulin before administration and a new policy that

will enable glucose lowering agents to be separated from others medications for easy identity.

Avoiding all forms of interrupting staff who administers medication during busy morning shift can help improve concentration and thereby reduce the risk of medication errors. The use of non-insulin syringes and insulin ampoules in nursing homes may not be appropriate, because nursing homes staffs unlike their counterpart in the hospital might not have enough skill to use them effectively. Keeping client's medication securely in own room might not sound sensible but can help to avoid some kind of mixed up. It is also a wise idea to create a forum where staffs can come together and share their experience about how they got involved in an error or missed errors, can help to create some level of awareness within the staffs and thereby reduce the risk for error.

However, no matter what ever solutions are adopted to reduce medication administration errors in nursing homes, the dignity, right and needs of the clients should remain paramount with medication administration being on behalf of the client rather than to the resident. For further study, it is recommended that another researcher finds out how alcohol use in nursing home can influence diabetes medication administration.

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APPENDICES

Appendix 1: Informed consent letter to participants

The researcher involve has written this consent to seek my participation in the study. Specify the name and author of the study, as well as the type of case (a thesis, development, etc.) indicate where and how the results of the study will be published.

I have been described above with respect to the purpose of the study and the research methods used in the study. I am aware that participation in the research is voluntary. I am also aware of the fact that participation in the research will not cause me any kind of cost, my identity is just the attention of the researcher, I will be the only material used in this research and the material disposed of the study has been agreed on.

I agree that I will be interviewed, and I will be ready to provide the information needed for the research. I may choose to suspend participation in the study at any time without that I need to justify the suspension or that it will affect the care or client's warfare or employment relationship.

Date:

The informant's name and signature.

Appendix 2: The general interview questions

- 1) Do you have some diabetic clients?
- 2) How many diabetic clients do you have?
- 3) Which type of Diabetes do they have?
- 4) What kind of medication do they get?
- 5) Who administer the medication to the clients?
- 6) How do they administer the medication?
- 7) Are there any problems/challenges in administering diabetic medications?
- 8) What are the problems / challenges?
- 9) How can the problem/challenges be solved?
- 10) Have there been any diabetic medication administration incidence / error? If yes, what are the errors?
- 11) How could diabetic medication administration incidence / error be avoided?