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Non-Specialized Nurses Roles in Diabetes Inpatient Care in Cyprus: An Interpretive Phenomenological Analysis

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Abstract: Aim: The aim of the study was to understand how non-specialized nurses and people with diabetes understand nurses' roles in diabetes inpatient care. Background: Diabetes mellitus is a major public health issue that places a significant burden on patients and healthcare systems and world leaders have targeted it for priority action. Design: An interpretative phenomenology approach (IPA). Methods: A total of 24 non-specialized nurses working in medical, surgical and nephrology wards and 24 people with type 1 diabetes who use the services of the state hospitals in Cyprus. The data were collected in two phases: firstly, focus groups with nurses (n = 1) and people with diabetes (n = 2) were conducted and analysed and then individual semi-structured interviews with nurses (n = 18) and with people with diabetes (n = 12) were conducted. Findings: It is evident from the study findings that nurses experience several roles in diabetes inpatient care. Most of these roles have been identified by people with diabetes as well. These roles are summarized as follows: medication administration, patient education, screening of complications, diet and psychological support. However, most of the participants raised concerns about nurses' ability to conduct such roles. Conclusion: Participants suggest that nurses experience several roles in caring for diabetes inpatients and this view was also shared by people with diabetes. However, it was obvious that these roles differ between specialities. The findings showed that even though participants recognized a number of roles in diabetes inpatient care, their description of how they perform these roles was vague, and they raised concerns about their readiness to take on some of these roles.

Keywords: diabetes; nurse roles; people with diabetes; inpatient care



Citation: Nikitara, Monica, Costas S. Constantinou, Eleni Andreou, Evangelos Latzourakis, and Marianna Diomidous. 2022. Non-Specialized Nurses Roles in Diabetes Inpatient Care in Cyprus: An Interpretive Phenomenological Analysis. *Social Sciences* 11: 464. <https://doi.org/10.3390/socsci11100464>

Academic Editor: Nigel Parton

Received: 4 July 2022

Accepted: 1 September 2022

Published: 10 October 2022

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1. Introduction—Background

Diabetes mellitus (DM) is a major public health issue that places a significant burden on patients and healthcare systems and world leaders have targeted it for priority action (WHO 2016). In 2019, approximately 463 million adults (20–79 years) were living with diabetes and a further 1.1 million children and adolescents under the age of 20 live with type 1 diabetes (International Diabetes Federation 2019). These statistics highlight the large number of people with diabetes, which is increasing worldwide. The literature supports that nurses have a central role in the multidisciplinary team of diabetes, especially when educating people with diabetes on how to modify their lives in order to have a better outcome (Hoffman 2013). Thus, numerous changes have been made in the treatment and care for diabetes through the years in order to respond to the increasing numbers of diabetes morbidity. Such changes include the important role of the nurses in diabetes care with the launch of the position of diabetes specialist nurse (DSN) and the expansion of their role in primary healthcare (PHC). DSN have the authority to prescribe medication in several countries in different settings of a healthcare system (Maier 2019).

However, these roles are not available universally and the extent of their authority is limited to a range of countries. At the same time, the role of the nurses in the PHC has been expanded and nurses are expected to have greater knowledge about prediabetes and type 2 diabetes while educating patients and supporting them to engage in a new way of living in order to minimize their risk profile (Daly et al. 2019). These developments in nurses' roles in diabetes care have been found to improve clinical outcomes, reduce inappropriate referrals to secondary care and reduce outpatient attendance (Riordan et al. 2017).

However, the above initiatives mostly refer to primary healthcare settings and type 2 diabetes. In contrast, people with type 1 diabetes suffer for a longer period of time and may be admitted to hospitals for diabetes-related or unrelated conditions which can alter their normal routine (NICE 2016). Several studies confirm that a patient with diabetes is more prone to stay longer in the hospital in comparison to a patient without having a history of diabetes, despite the fact that they may be admitted to the hospital with the same diagnosis (Comino et al. 2015). Most people with diabetes are not admitted to the hospital because of their diabetes, although a hospital stay can be a frightening experience for them because of the possibility that their glucose levels could become deregulated. It is also documented that people with diabetes who are admitted for hospital care will more likely experience an infection in comparison with those without diabetes, and people with diabetes also have a 6.4% increased mortality rate (Holman et al. 2013). Furthermore, medication errors during hospitalization are a serious problem; 260,000 people with diabetes in England experienced an error which could have resulted in serious harm or even death (Health and Social Care Information Centre 2017). Specifically, 1 in 25 people with type 1 diabetes developed in-hospital diabetes ketoacidosis due to being undertreated with insulin, and half of the hospitalized patients experienced insulin errors (Diabetes UK 2017). People with diabetes experience poor inpatient care due to the lack of infrastructure (Nikitara et al. 2020) and did not see a diabetes care team due to understaffing and lack of process (Health and Social Care Information Centre 2017). That means that patients might not receive the necessary specialized support required for diabetes care and this could lead to several adverse effects during hospitalization.

What is of great worry, throughout the world, is that nurses working in a variety of healthcare settings have been shown to have knowledge deficits in all aspects of diabetes care and its management (Alotaibi et al. 2017) while there are no agreed nurses' roles in diabetes care (Nikitara et al. 2020). The unpredictable environment of interprofessional role boundaries and the scope of practice of specialist diabetes educators and nurses may mean that the roles of different members of the healthcare team are not clearly understood, particularly in a multinational workforce (Alotaibi et al. 2018). In Alotaibi et al.'s study, nurses study reported widely varying attitudes, with evidence of uncertainty and ambivalence about what their roles could, should and did entail. Furthermore, Nikitara et al. (2020) found that there are no internationally or even nationally agreed upon roles or responsibilities for diabetes for non-specialized nurses. Furthermore, nurses' "lack of knowledge" of diabetes care has been well documented in the literature in previous studies in both developed and developing countries, and our findings add to the evidence. Furthermore, numerous studies have been conducted to identify what factors influence nurses' knowledge acquisition for diabetes care (Alotaibi et al. 2018; Hollis et al. 2014). Despite the plethora of repeated evidence of the nurses' lack of knowledge and the risk to patients' outcomes, nothing was found in the literature about initiatives or developments announced by professional bodies regarding how to tackle this issue.

Taking into consideration the developments and initiatives that have taken place over the last years in order to confront the disease of diabetes, the statistics still highlight the large number of people with diabetes, which is increasing in number worldwide. Therefore, since nurses have an important role in being involved in diabetes care, it is of great importance to clearly identify their multiple and sometimes complicated roles in diabetes care, and help them to provide the best quality of care. Interestingly, in the literature there is a huge gap in understating holistically the role of nurses in inpatient type 1 diabetes care. On

the basis of this important identification, this study aims to fill in this gap by employing a qualitative research methodology in order to explore nurses' and patients' views with regard to the role of nurses and understand in depth the relationship between nurses' and patients' experiences. Such a qualitative inquiry will provide useful insights for proposing ways to enhance type 1 diabetes inpatient care and a basis for assessing such care in relation to health outcomes.

Healthcare Context in Cyprus

Cyprus is a member of the European Union (EU) and the eurozone. In 1974, Cyprus was divided into two zones: north and south. The northern part of Cyprus is occupied and there is no adequate access to information about the health of people living there (Theodorou et al. 2012). Therefore, all figures and discussions in this chapter refer to those areas that the government of the Republic of Cyprus controls. Nearly 70.2 per cent of the population lives in urban areas, with an average household size of 2.84 persons (Statistical Service 2012). In 2011, the population in the government-controlled area was 838,897 (Statistical Service 2012). The life expectancy at birth is 77.9 years for males and 82.4 years for females. The Cyprus government is also facing the challenge of the ageing population despite the fact that, in relation to other EU countries, the Cypriot population is comparatively young. The most frequent long-standing health problems are hypertension, problems with the lower spine and the neck, hyperlipidemic issues, severe headaches, problems with the respiratory system, ulcers and an increased rate of diabetes mellitus (Theodorou et al. 2012).

In Cyprus there are five district hospitals and one paediatric/gynaecological hospital, four specialist centres, three small rural hospitals and thirty-eight health centres, as well as many sub-centres for primary services (Theodorou et al. 2012).

In 2016, the Ministry of Health published a report on the National Strategy for Diabetes Mellitus. Since this is the most updated and comprehensive report, all the information has been taken from this (Ministry of Health (Cyprus) 2016). The strategy has been developed in response to the recognition of the increment of diabetes disease worldwide. In a study conducted by Cuschieri et al. (2021) to map the burden of diabetes in five small countries in Europe (Cyprus, Iceland, Luxembourg, Malta and Montenegro) found that Cyprus ranked the highest in terms of diabetes mortality at the population level, followed by Montenegro and Malta, and diabetes prevalence rates varied across the five small countries, with the highest rates being reported in Malta and Cyprus followed by Montenegro.

In the public sector, people with diabetes can go to a rural outpatient hospital for primary care. Each district hospital has doctors and nurses in the diabetes clinics who are specialized in diabetes mellitus. In order to care for the large number of patients attending these clinics, the Ministry of Health trained general practitioners on diabetes and then appointed them to the clinics for a few days per week. People who have difficulties in regulating their disease or need specialized exams were referred to the diabetic clinics according to a protocol the Ministry developed.

Simple palliative actions and the treatment of minor complications such as caring for the diabetic foot when wounds are superficial are offered mainly at the primary centres. There are no organized diabetic foot centres and there is a different approach to the treatment in each provincial hospital. There is a lack of medical, nursing and other health-related professionals at the provincial hospitals, while most hospitals lack basic specialities.

2. Methods

2.1. Study Design

The current study reflects interpretivism epistemology, was informed by phenomenological social theories and strictly followed the IPA methodology in order to better understand how non-specialized nurses and people with diabetes, through their experiences, view nurses' roles in T1D inpatient care.

2.2. Data Collection

In line with the theoretical underpinnings of IPA, the sample of participants for this study was purposive and homogenous. The sample consisted of 24 nurses working in medical, surgical and nephrology wards in the state hospitals of Cyprus, (six nurses in a focus group and 18 in interviews) and 24 adults who have T1D (12 in focus groups and 12 in interviews). Two sources for gathering data were used namely focus groups and interviews. One focus group with six nurses working in a range of specialities and two focus groups with people with diabetes. Following that, to gain a deeper understanding of their experiences, 18 individual interviews with nurses working in medical, surgical and nephrology wards were conducted and 12 interviews with people with diabetes. The sample covered the entire area of Cyprus since participants were recruited from each city in Cyprus. All the necessary approvals and licenses were granted from the responsible bodies.

This study used two methods for gathering data: focus groups and interviews

To get access to the nursing sample, it was necessary to have a license from the Ministry of Health and the directors of the public hospitals to enter the hospitals. All of the participants were asked for their consent to be in the study.

Regarding the sample of people with diabetes, the Cyprus Diabetes Association was contacted with a formal letter sent by email. People who were interested in participating in the study contacted the researcher directly for more information about the nature of the study. The first 12 respondents were asked to participate in the study as well, which included two focus groups. An additional 12 patients provided consent to be interviewed.

For the first stage of the study, the first six respondents from nurses were asked to participate in the study which included a focus group to guide the interview questions. In the second stage, eighteen nurses accepted to be interviewed. The reason for having only one focus group for the nurses was because of the low response rate from them to participate in focus groups and because it was difficult for the participants to agree on a common date and time for the focus group. This was a very time-consuming process that delayed the progress of the study.

At the same time, the first 12 respondents from people with diabetes were asked to participate in the study which included two focus groups to guide the interview questions. In the second stage, 12 people with diabetes accepted to be interviewed.

The focus groups followed a predetermined schedule of topics, which allowed the participants to describe and discuss their experiences with diabetes inpatient care. The participants were asked questions based on the study to gather information to help in making decisions regarding the research. This gave the researchers the opportunity to make the interview guide, include additional probes for the individual interviews and enrich the sources of data in depth. Additionally, the researchers had a chance to become more familiar with how participants experienced the topic. After the completion of the focus groups, for the second stage of the study, the researcher continues with semi-structured interviews with 18 nurses and 12 people with diabetes. The duration of the interviews was approximately 45 min to one hour. An interview schedule to help guide the discussions in the interviews was developed.

To ensure rigour, the current research is focused on five criteria (credibility, transferability, dependability, confirmability and reflexivity) to ensure quality, since this is a qualitative method and is also based on the participants' experiences.

3. Data Analysis

The data analysis followed the four stages proposed by [Smith and Osborn \(2008\)](#) which helped us to identify the shared experiences of nurses and of people with type 1 diabetes. Smith et al.'s stages are to look for the themes of the first case, connect themes, continue analysing other cases and write up the results.

3.1. First Stage—Looking for the Themes of the First Case

At this stage, the researcher spent time analysing the first transcript. While the current study collected data through focus groups and individual interviews with two different groups (nurses and people with diabetes), the first case was the focus group. After the completion of the focus groups, we carefully read the first focus group with nurses a number of times and recorded any thoughts, wrote possible codes and noted anything that was of particular interest. After familiarization with the context, emerging themes were extracted and similarities were identified. These themes helped the researcher to formulate the interview schedule for the semi-structured interviews with nurses. The same procedure was followed by a second researcher in order to ensure accuracy and quality. The two researchers then met to discuss their findings and refined the codes and themes. The same process for the initial coding was also done for the first focus group of people with type 1 diabetes.

After completing the semi-structured interviews with nurses, the researcher started to analyse the interviews. The focus groups were used as the first transcripts and guided the coding of the interviews. Therefore, the researcher used the noted codes and themes from the focus group to orient the following coding and analysis. The same process was followed after the completion of the semi-structured interviews with people who have diabetes.

3.2. Second Stage—Connecting Themes

At this stage, we brought together all the themes that were previously identified in the focus group transcript and transferred them into an Excel document. Then, through an analytic process, we examined all of the themes to find any general categories that could be connected and combined, including seemingly dissimilar themes. After clustering the themes, we prepared a table with the final themes. The exact same process was followed for the focus group with people with diabetes, the interviews with nurses and the interviews with people with diabetes.

3.3. Third Stage—Continuing the Analysis of Other Cases

At this third stage, we continue with the analysis and we incorporate interviews into other interviews. We use the first case to orient the subsequent analysis, as this reflects the methodology for achieving theme saturation.

3.4. Fourth Stage—Writing up the Results

Ethical Considerations

This research has received a clearance letter from Cyprus National Bioethics Committee. Additionally, a license was acquired by the Ministry of Health and the directors of the public hospitals to enter the hospitals and leave with them the participant information sheets (PIS). All the participants were assured that they would remain anonymous, that all of their personal information was confidential and that their participation in the study was voluntary. Nurses were informed that they could withdraw at any time during the project without this affecting their work status. The Standards for Reporting Qualitative Research checklist was used to ensure the quality of the study.

4. Findings

4.1. Nurses' Views about Their Roles in Diabetes Care

The following themes are derived from nurses' reflection on their experiences: (1) medication administration, (2) patient education, (3) screening of complications, (4) diet, and (5) psychological support (Table 1).

Table 1. Nurses' Views about Their Roles in Diabetes Care.

N	Screening Complications	Medication Administration	Patient Education	Psychological Support	Diet
1-F-24-Pa-Me	✓		✓		✓
2-F-45-Pa-Me		✓	✓	✓	✓
3-F-31-La-Me			✓		✓
4-F-30-La-Me		✓			✓
5-F-30-Li-Me					✓
6-43-M-Li-Me	✓		✓		✓
7-35-F-Ni-Me	✓		✓	✓	✓
8-48-F-La-Sp	✓	✓	✓		
9-61-F-La-Sp			✓		
10-43-F-Am-Sp		✓	✓		
11-48-F-La-Su				✓	
12-33-F-La-Su	✓	✓	✓	✓	✓
13-32-F-La-Su	✓	✓	✓		✓
14-30-F-Ni-Su-Re	✓		✓		✓
15-33-F-Ni-Su	✓	✓	✓	✓	
16-35-F-Ni-Re	✓	✓	✓	✓	✓
17-35-F-Ni-Re	✓	✓	✓		✓
18-35-F-Am-Re	✓		✓		
Focus group	✓	✓	✓		✓

4.2. Medication Administration

A number of participants reported that administering medication was one of their most often performed duties. However, the amount of responsibility nurses assumed varied between ward specialities. For example, nurses working in surgical and renal units view their role in administering medication as a specific, routine process which incorporates simply measuring glucose levels and then giving the required dose of insulin based on physicians' orders. For example, two nurses explained:

"Basically, as nurses, our role is to measure, to give insulin accordingly and to inform physicians. Afterwards the doctors will decide the type of insulin that they will give, if they will give and the units they will give." (13-32-F-La-Su)

"Depending on the glucose levels, you are given insulin if it is given intravenously. Every 4 h, if you administer intravenous fluids and the patient is not eating properly, you put insulin according to the glucose levels, we put the corresponding serum and give insulin." (15-33-F-Ni-Su)

Interestingly, nurses working in medical wards reported that they take on an educational role when administering medication, especially when they are caring for newly diagnosed patients who usually present high levels of stress and anxiety.

"They ask, 'How will I go home?'. They are anxious about going home and wonder how much insulin to take, what insulin is, what to eat." (2-F-45-Pa-Me)

"We, in the department, explain things to them . . . when they are newly diagnosed, we always explain to them . . . and before inserting the Actrapid and Landus . . . we will explain to them because it is something new for them." (4-F-30-La-Me)

4.3. Patient Education

All of the participants identified patient education as the most important aspect of diabetes care, and they highlighted the importance of their role in inpatient education. In fact, all of the nurses, even from different speciality wards, said that educating patients is very important. Most of them claimed that they feel satisfaction in educating a diabetic patient and they indicate that some of the elements which they include in their teaching are diet, exercise, taking insulin, hygiene and preventing complications. However, most of them gave greater emphasis on explaining glucose monitoring and taking insulin.

For example, participant 2-F-45-Pa explained that:

"... I will start with the diet, that is the most important, then exercise, then the administration of insulin and storage, I will tell him about hygiene, the shoes, the sex life which is a taboo ..." (2-F-45-Pa-Me)

Participant 6-43-M-Li-Me clarified:

"It happened to me very often to train ... how to inject insulin or what to eat ... what hours ... in the hospital where I work, a patient who will leave the department and begin his home insulin will receive training from nurses before leaving ..." (6-43-M-Li-Me)

Almost all of them said that educating patients about diabetes is something that they do regularly and simultaneously while they perform other nursing activities for their patients, such as measuring glucose levels or monitoring their vital signs. None of them referred to any specific methods of patient education or that they use any protocols or guidelines.

On the other hand, the least experienced nurse (1-F-24-Pa) claimed that, despite the importance of patient education, she had never taken on that role with any patient. Additionally, some of the nurse participants reported that this role is largely undertaken by the diabetes specialist nurse.

However, although all of the nurses said that diabetes patient education was very important, most of them also reported that they felt the education provided to their patients was sometimes inadequate due to a number of barriers that will be discussed later in the section.

4.4. Screening for Complications

The majority of participants referred to the important role that they play in screening and dealing with complications arising from the disease. According to their ward speciality, nurses referred to different complications that they have to screen for. For example, nurses working in the medical ward spoke about treating conditions such as unregulated glucose levels, hyper- or hypoglycaemia, hypokalaemia and diabetic ketoacidosis. Most nurses seem very comfortable in dealing with these complications due to their experience, as the following quotations indicate:

"I usually see cases of hyperglycaemia, hypoglycaemia. I have seen so many cases. Because of the experience, I can handle a hypoglycaemic or hyperglycaemic event."

(6-43-M-Li-Me)

"I mean I can recognize a case of hypoglycaemia ... because diabetic ketoacidosis is usually diagnosed in the ward ... and I take my measures after I tell the doctor ..."

(7-35-F-Ni-Me)

On the other hand, nurses working in surgical wards mostly referred to screening for diabetic ulcers or caring for an amputation, whereas nurses in the renal ward referred to complications during the haemodialysis, such as hypoglycaemia, as well as screening for foot ulcers. In support, participant 13-32-F-La-Su explained that

"Look. We are working with people with diabetic legs. They come at various stages of their problem, at an early stage, in case amputation is needed." (13-32-F-La-Su)

5. Diet

The participants referred to their responsibility to look after patients' diets. Nurses working in medical wards said that explaining to a patient with diabetes how to eat properly was part of their educational role, whereas nurses working in surgical and renal wards saw their role regarding patients' diet had only to do with the type of food that they would order for their patients and to ensure that their patients received the proper nutrition. Most of the participants expressed their satisfaction regarding their involvement in monitoring the patients' diabetic diet. Only two participants who came from the same hospital reported that their patients' diets were clearly the role of the dietitian.

Despite most participants recognizing the importance of diet for diabetic patients, some nurses in the focus group raised their concerns. That is, they discussed that nurses might serve the wrong meals to diabetic people, resulting in uncontrolled glucose levels. Additionally, they reported that the kitchen staff or the dietitian treated diabetic patients the same as other patients regarding their diet, with the only difference being the type of bread. Because of this situation, they raised concerns about the availability of dietitians. More specifically, the following participants from the focus group explained:

"All the diabetics are all the same. And it is completely wrong. They eat pasta for example; they eat bread for example ... After eating, all their sugars go up. For sure."
(Focus group)

"The diets the patients have at the hospitals are very wrong. We are supposed to have the dietitian responsible for this ... " (Focus group)

"The only difference between other patient is in bread ... Just exchange the white bread in black and put more vegetables." (Focus group)

6. Psychological Support

An interesting finding of the analysis is that only a few of the nurses spoke about offering psychological support to patients with diabetes, and those who did mention it referred to offering courage and consolation to their patients. The three nurses who reported that this was part of their role were working in the surgical and renal wards and one from the medical ward.

Three nurses working in medical wards reported that their role is to identify if their patients have psychological issues and to make the necessary referrals. However, these participants recognized that there was no psychologist in their team and that they had to take on this responsibility by themselves. More specifically, 7-35-F-Ni-Me said

"Our hospital has no psychologist, only psychiatrists ... So the nurse at this stage can also be the psychologist."

However, one of the participants who is a nurse supervisor showed uncertainty about nurses' ability to offer such services and maintained that their nurses lack training and knowledge in performing this role adequately:

"... but to treat him as a psychology, as an entity, and to help him overcome his illness and live with his illness was not satisfactory. Because we have not learned any psychology on these issues ... " (11-48-F-La-Sup)

7. Views of People with Diabetes Regarding Nurses' Roles in Diabetes Care

In this part of the analysis, we focused on the lived experiences of people with diabetes regarding nursing roles in diabetes care. As has been said in the introduction of the analysis, themes were generated from two focus groups, each consisting of six people with type 1 diabetes, and from twelve interviews with people with diabetes for one-to-one interviews. All of the participants were people with type 1 diabetes who lived in different cities in Cyprus, which is evident in their various descriptions. Participants' views about nurses' roles in diabetes care were not clear and it was apparent from their responses that they had limited opinions about what to expect from nurses in diabetes care. Additionally, almost

all of the participants reported that they avoided using state hospitals because the services provided were inadequate, although they had had some experience as inpatients.

The themes generated from the research question on patients' lived experiences about nurses' role in diabetes care were: (1) patient education, (2) glucose monitoring and medication administration, (3) patient support and (4) diet (Table 2).

Table 2. Views of People with Diabetes Regarding Nurses' Roles in Diabetes Care.

N	Patient Education	Glucose Monitoring and Medications	Patient Support	Diet
Focus Group 1	✓	✓		
Focus Group 2	✓			
1		✓	✓	
2		✓	✓	✓
3		✓		
4	✓			
5				
6	✓			✓
7				
8		✓		
9		✓		
10		✓		
11		✓		
12		✓		

7.1. Patient Education

Some of the participants referred to the nurses' educational role; however, they did not give extensive information about what nurses do or should do to educate patients about how to manage their disease. More specifically, one participant asserted that nurses do educate patients.

"Watching the diabetes clinics in Limassol and Nicosia, I have seen many times the girl in the clinic training newly diagnosed patients and old patients." (Focus group 2)

Two other participants highlighted the importance of the educational role that nurses have or should have in teaching newly diagnosed patients the techniques to self-administer insulin. More specifically,

"Nurses can help you learn how to do the injections, etc.—that technical aspect. The nurse will show you how to inject the insulin and where." (Focus group 1)

"It is in the role of the nurse to sit with you and to spend time to teach you how to handle the equipment . . . He will do the right training in this thing, correctly supervise you in the beginning until you learn the right way, whether you use the insulin pen or the insulin pump" (Participant 6)

7.2. Monitoring Glucose and Administering Medication

When participants were asked to say what the roles of the nurses were, some of them said that, based on their own experiences, that nurses mainly measured their blood glucose levels and according to that reading, they would administer the medication to the patients. The following words are illuminating:

"They simply measured my sugar and recorded it." (Participant 2)

"They just make the glucose measurements in order to have better control of the sugar." (Participant 1)

"To give your medications and your insulin. To control my sugar, because it is increasing from the stress, and they will come to give me my injection. The nurse will just bring me the medication on time." (Participant 9)

"They need to know how to monitor the patient's glucose levels, to know how to reduce and increase insulin" (Participant 10)

A participant who had been recently admitted to the hospital reported from his experience that the only thing the nurses in the inpatient setting did was to provide him with the insulin he required.

"I do not think they should do something more . . . They just had to provide me with the insulin I needed." (Participant 3)

Another participant agreed with the others in the group who said that a nurse's role in relation to diabetes care is to provide the patient with medication.

"To give him the medication that is needed, and to know about this medication" (Participant 1)

However, some of the members from focus group 1 had further opinions about nurses giving their insulin. Participants who had been inpatients expressed their frustration that nurses did not follow the individual patients' timetables about when they needed to receive insulin. More specifically, a number of participants said:

"When I was admitted lately in the hospital, let's say at 9 o'clock they have to give me insulin because I was not keeping my insulin myself, they were holding it. Instead of coming at 9 o'clock, they used to come at 11 o'clock." (Focus group 1)

"However, nurses must understand through doctors that when a person has to be injected at 9 o'clock, you cannot do it at 12 or 1 o'clock. They are not aware of the consequences for the diabetic." (Focus group 1)

"A patient cannot eat at 6 o'clock and get the insulin at 6:30. Thus, I had my injection and I was doing it myself." (Participant 11)

7.3. Patient Support

Two of the participants mentioned that the nurse should support diabetic patients. One of the participants said this role was necessary so patients could develop trusting relationships with their healthcare providers, while the other person said patients need nurses to offer psychological support and that nurses should not merely fulfil their technical roles.

"To give support that must be given to that person. In general when you are sick, you want that . . . You want to know that nurses know, that they support you . . . , that they are next to you; this gives you that trust . . . " (Participant 1)

"It would be especially helpful to a lot of people who are newly diagnosed psychology. Not just to perform the procedure with the needle and to record them." (Participant 2)

7.4. Diet

Except for two people, most of the participants did not mention the role of nurses in diabetic patients' diets. Those two who brought it up also had different opinions on it. One said that the nurses serve meals to patients and the other participants agreed with this statement, based on their own inpatient experiences. Another participant stated that nurses should explain to newly diagnosed patients about the diabetes diet and specifically the correlation between consuming carbohydrates and insulin.

"When I was admitted, they changed my IV fluids, then they checked to see how I was feeling and then they brought me my food." (Participant 2)

"If we are talking about a newly diagnosed patient who does not know how to measure carbohydrates, the nurse should know how to help him. When the patients ask the nurses,

‘How much insulin do I have to use after I eat?’, the nurses should know how to answer him.” (Participant 6)

8. Summary

It is obvious from the above analysis that nurses have multiple roles when caring for people with diabetes during hospitalization. These roles have been identified mostly by the nurse participants despite the fact that there were differences between their ward specialities. What was obvious is that people with diabetes participants do not have a clear understanding of these roles according to their experiences and it was difficult for them to give detailed information about what to expect from nurses in diabetes care.

9. Discussion

Nurses’ Roles in Diabetes Care

It is evident from the study findings that nurses experience several roles in diabetes inpatient care. Most of these roles have been identified by people with diabetes as well.

One of their most important performed duties was the monitoring of glucose levels and administration of medication, and people with diabetes also shared this view. However, nurses’ responsibilities in administering medication differed between ward specialities, with medical ward nurses including their educational role, whereas nurses from surgical and renal wards referred to this role as just a routine process which incorporates simply measuring glucose levels and then giving the required dose of insulin based on physicians’ orders. This is consistent with [Odberg et al.’s \(2019\)](#) study that found that one of the most important contributions to the management of diabetes was to give diabetic drugs and adjust dosages. Careful administration of medicine is important because insulin is one of the top-10 riskiest medications to administer worldwide ([Lamont et al. 2010](#)) and there is growing alarm regarding in-hospital administration of subcutaneous insulin, which is considered to be frequently performed in an unsafe manner ([Theofanidis 2017](#)). Even though nurses learned and acquired skills on how to administer subcutaneous injections through their basic nursing education, still there are concerns regarding unsafe professional practices in giving injections ([Theofanidis 2017](#)), including the lack of up-to-date knowledge, sloppy technique and the absence of objective with regard to imparting improved long-term clinical outcomes for patients ([Ogston-Tuck 2014](#)). However, since our study was not investigating if our participants used any international guidelines regarding insulin administration technique, we cannot assume that they do not follow these guidelines, even though nobody referred to them and despite the evidence in the literature that verify it.

Furthermore, in our study, there was no referral from the people with diabetes or the nurses regarding their role in prescribing medications, despite the existence of DSNs in Cyprus. The primary reason for this is that the law in Cyprus does not allow nurses to prescribe medications, and there was no DSN working in the inpatient setting. This supports what has been said in the literature review chapter in that, although most countries adjusted the diabetes specialist nurse in their healthcare systems, nurses’ roles and work settings differed between countries. Furthermore, this is an important identification, since the development of the DSN and the changes in legislation to allow nurses to prescribe were aimed to address the increase in diabetes morbidity and mortality rates, and these initiatives found that improved clinical outcomes reduce inappropriate referrals to secondary care and outpatient attendances. Therefore, the restriction of DSN practice does not enhance their roles and limits the benefits of nurses prescribing medication. The intention was to improve patient care and access to healthcare professionals, to make better use of the skills of healthcare professionals and encourage more flexible working.

The participants identified “patient education” as another role. [Powers et al. \(2016\)](#) documented the necessity of appropriate education by involving patients in everyday decisions regarding dietary choices, physical activity and adherence to drug prescriptions. Nurses have a central role in empowering people with diabetes, and [Corl et al. \(2015\)](#) highlighted the importance of inpatient diabetes education and care. In that study, most of

the nurse participants recognized the important role they had in diabetes patient education, including several elements which are in accordance with previous studies, but participants with diabetes referred to this role, although their description was vague. However, the nurse participants stated that they educate their patients while they conduct other nursing activities, and nobody referred to any structured protocol or guidelines during patient education, although some raised concerns about providing inadequate patient education.

Nurses, regardless of their speciality or the level of care they work at (primary or secondary care), might have to treat a patient with diabetes, and the focus of their care for these patients should always be on patient self-management (Hollis et al. 2014). Nevertheless, self-management education is a vital aspect of diabetes care, and much of the literature gives attention to the fact that health professionals working in hospitals have deficient knowledge of educating newly diagnosed patients (Abduelkarem and El-Shareif 2013) and that patients' poor health literacy could lead to readmissions (Rubin et al. 2014). As a response to those deficiencies, in 2006, the National Standards for Diabetes Self-Management Education (DSME) was created, despite its introduction in the 1940s (Osborn and Fisher 2008) aiming to guarantee the quality of self-management education provided to patients with diabetes. The main objectives of the DSME are to support and assist diabetes educators to train patients to take decisions with respect to their disease by providing evidence-based education and self-management support. Despite the DSME's development, there is still no education programme for patients with diabetes that can be standardized and deemed effective for all patients despite the numerous studies in the literature about effective educational interventions (Grillo et al. 1992). Therefore, the absence of a universal educational programme could be one reason why our participants did not mention using any educational guidelines or protocol when describing their educational duties in general, and most of them referred to different educational elements according to which ward they worked on. A preparatory course in educational programmes either in an undergraduate degree or postgraduate programmes in Cyprus about patient education and specifically for people with diabetes would improve the above gap in the nurses' roles.

Moreover, the literature recommends that education should be provided through health behaviour change theories and models (Hood et al. 2015; Chew et al. 2018). An important objective of these recommendations is to help diabetes patients to live as normally as possible, by involving them more in their own treatment and enabling them to cope on their own in their everyday life. Therefore, the aim of diabetes education should be focused on establishing dynamic self-care behaviour in patients with diabetes (de Weerd et al. 1989). However, despite the existence of several theories and models that can be utilized in educational programmes, an important criticism of many diabetes patient education studies is the absence of an explicit theoretical framework. For instance, a systematic review was conducted by Sherman (2016) which aimed to determine to which degree empirical studies related to type 2 diabetes self-care management of African-American men are using theoretical construct utilization. The findings showed that 35 out of 50 studies did not refer to any use of a theoretical framework or model to empower participants in self-care management. Since our participants did not refer to any educational programme or guidelines/protocols that they use for patient education, it is questionable whether our participants are aware of the existence and the importance of theory-based educational programmes on diabetes which will enhance the possibility of behaviour change of diabetic patients. Definitely, it is of great importance for the authorities in Cyprus to develop such programmes which will aim to encourage people with diabetes to behaviour change rather than comply with the health professionals' orders.

Another reported nursing role in diabetes care, but only from the nurses' perspective was the "screening for complications", specifically for short-term complications. Again, there were variations in the responses according to the nurse's speciality. For example, nurses in medical wards referred to medical deregulation of glucose, nurses from surgical wards said they treated wounds of diabetic ulcers and nurses from nephrology ward mentioned complications during haemodialysis. The variation in their roles according

to their work speciality is reasonable since patients are admitted to each speciality ward according to their diagnosis and therefore there is a need to focus on the outcome of the treatment for this specific diagnosis.

This is supported by the literature, in which studies that referred to the roles of primary care nurses in taking care of diabetes complications include more long-term elements in their screenings, such as blood pressure, eyes and feet. Regarding foot care, the literature revealed that nurses' role includes foot examination and wound dressing (Woody 2020), which was found in the current study, but they also encouraged patients and families in appropriate care and to make follow-up visits regularly (Aalaa et al. 2012) which is something that the participants in this study did not mention that they did. This is because the nurses in our study are involved in secondary care even though they never mentioned their role in continuing diabetes care, especially regarding diabetes complications. The lack of the provision of diabetes care on a regular basis has been associated with a high risk of developing diabetes complications (Shrivastava et al. 2013). Suggestions were made about the importance of continuity in diabetes care as an element for the effective management of people with diabetes (Ruszala 2019). This is another element that should be taken into consideration in Cyprus in order to ensure safe continuity of care for people with diabetes in Cyprus which will prevent complications and readmissions in hospitals.

Although "nutrition education" for diabetes patients is the responsibility of dietitians and/or nutritionists, nurses have an important role to play (Mogre et al. 2015), because diabetes care is a multidisciplinary approach drawing upon the collaboration of various specialities (Peimani et al. 2010). However, during weekends or afternoons, hospitals do not have specific professionals available, such as diabetes educators or dietitians, in comparison to nurses who are available to patients all day, every day (Carney et al. 2013). This nursing role in nutrition education was identified by Florence Nightingale in 1861 when she wrote, "Every careful observer of the sick will agree in this, that thousands of patients are annually starved in the midst of plenty, from want of attention to the ways which alone make it possible for them to take food" (Skretkiewicz 1992).

Similarly, in the current study, both nurses and patient participants referred to the nurses' dietary responsibility, with nurses working in medical wards including it as part of their educational role, while nurses working in surgical and renal wards said that their role is only about ensuring that they provide and deliver the proper food to their patients. This is in accordance with the previous literature that acknowledges the importance of nurses supporting patients to maintain optimal nutrition (Mcclinchy et al. 2015; Xu et al. 2017). Furthermore, in the literature, only one study was found in relation to nurses' inpatient role in diabetes nutrition, and most of the participants in this study also referred to the importance of their educational role regarding diet (Carney et al. 2013). Specifically, the study found that the majority referred to their responsibility to educate patients about basic nutrition and help patients with their meals and respond to the alterations in blood sugar levels. Furthermore, participants explained that they believe it is within their responsibilities to advise patients regarding nutritional elements for diabetes, but a large percentage of them felt unconfident to provide such information because they lacked knowledge about nutrition information.

Taken together, these results indicate that nurses perceive nutritional management as a part of their role, despite the fact that they have not received the proper training to do so, which makes them feel unconfident when conducting such a role (Carney et al. 2013). Although our study did not investigate the nurses' level of knowledge regarding diabetes nutrition, there are other studies in the literature that have shown that nurses lack knowledge regarding diabetes nutrition (Mogre et al. 2015; Alotaibi et al. 2016). Therefore, it is concerning that nurses perceive that giving dietary advice is one of their roles, while nurses' inadequate knowledge could mean that people with diabetes might receive inappropriate assistance in the management of their disease.

Furthermore, participants in our study raised their concerns regarding the provision of wrong meals to patients with diabetes resulting in uncontrolled glucose levels, while the

choice of their food is the responsibility of other professionals, such as dietitians, although their availability is limited. They also said that diabetic meals are the same as other meals with the only difference being the type of bread. If this is the case, this is not in accordance with the American Diabetes Association (ADA 2017), which actually advocates that each patient should have a diet based on his/her specific needs. Therefore, since errors in diabetes meals could have adverse effects on glucose levels, there is a need to give greater emphasis to this and adjust the meals according to recent guidelines or advancements. For example, in some countries, people with diabetes are told to maintain consistent diets that have a set carbohydrate limit to match the fixed prandial insulin dose prescribed while in others, their meal plans have a “controlled” number of carbs that the patient needs to count, but has the flexibility to have a different total carb content with each meal (Drincic et al. 2017). Such issues could be eliminated in Cyprus by increasing nurses’ knowledge of diabetes diet through continuing education, better collaboration with dietitians and increasing the availability of dietitians in hospitals.

It is evident from the current study that few nurses and people with diabetes referred to nurses’ role of providing “psychological support” to patients with diabetes. Nurses referred to their uncertainty about their ability to offer such services, and patients mentioned their need for this support. It has been well established that suffering from diabetes may lead to psychological distress, such as depression and elevated symptoms (Rotella and Mannucci 2013; Mommersteeg et al. 2012; Nicolucci et al. 2013; Wong et al. 2017). The literature indicates that healthcare providers and specifically nurses recognized that they performed several tasks such as encouraging and giving emotional support and security in order to tackle the psychological issues of their patients with diabetes (Holt et al. 2016; Donohue-Porter 2013). However, there were studies that demonstrate that a range of healthcare professionals, including nurses, do not have the confidence to deal with or intervene effectively in psychological issues that people with diabetes have (Joensen et al. 2019) while others believed that managing psychological issues is less important than treating physical issues in improving the health of diabetic patients (Chapman et al. 2016).

However, the fact that only three of our participants referred to this aspect of diabetes care and that they also raised concerns about their ability to provide such care is concerning since emphasis has been given to tackling such issues in the last few years. For example, the Quality and Outcomes Framework encouraged general practitioners to screen for depression in high-risk groups, including people with diabetes, who, in comparison to the general population, have higher rates of depression (Gilsanz et al. 2019). Furthermore, Kalra et al. (2018) emphasize that there is a lack of attention given to the psychological problems of people with diabetes and to the significance of the treatment and the identification of these issues. More recently, the American Diabetes Association in 2016 released its first position statement that included detailed guidelines for psychosocial assessments and care (in Young-Hyman et al. 2016), and the National Diabetes Nursing Knowledge and Skills Framework (NDNKSF 2018) in New Zealand issued the latest version of their framework in which the provision of emotional and psychological treatment and support has been a dominant area of focus. Therefore, despite all this focus and initiatives developed across countries regarding diabetes psychological aspect, the findings of the current study revealed that the nurses still have concerns about their ability to provide such support and at the same time only a few of them referred to this issue. Certainly, the great concern is about the quality of care provided to diabetes patients since diabetes distress may lead to poor self-management, low self-efficacy and low perceived control and in turn bring about poor diabetes outcomes (Wong et al. 2017). Better preparation of nurses in Cyprus for their role in emotionally supporting patients with diabetes would result in a trusting relationship between the two parties which is important for the outcome of the patients.

It is obvious from all the above that both nurses and patients have similar views about the nurses’ roles in diabetes inpatient care. However, no studies could be found in the literature about any international or even national agreed roles or responsibilities for diabetes inpatient care for non-specialized nurses. It would have been more beneficial for

both parties, nurses and patients, and even on a national or international level, to clarify these roles and responsibilities and give greater emphasis to them either during nurses' education or through their continuing development.

10. Conclusions

Analysis of data from both groups of participants suggests that nurses experience several roles in caring for diabetes inpatients and this view was also shared by people with diabetes. These views were in accordance with the previous literature. However, it was obvious that these roles differ between specialities, and differences were found between other countries in relation to the context of nurses' jobs. For example, there are countries in which nurses cannot legally prescribe medicines, and this role was something that was not mentioned in our findings. Furthermore, the findings showed that even though participants recognized a number of roles in diabetes inpatient care, their description of how they perform these roles was vague, they raised concerns about their readiness to take on some of these roles and some of the nurse participants admitted that they did not perform these roles. However, it is important that no studies were found in the existing literature on nationally or even internationally agreed nursing roles and responsibilities for diabetes inpatient care and specifically for nurses who are not specialized in diabetes.

Concluding all the above, it is obvious from this study that Cyprus nurses' roles in diabetes inpatient care are critical and multifaceted like worldwide but a number of these roles could be enhanced in order to improve nursing care. Nurses' roles and responsibilities regarding inpatient diabetes care should be defined at a national or even an international level. Other diabetes specialist nurses, who are involved with medication management and are working at advanced levels of practice, should consider adopting the prescribing role. A uniform model should be engaged for diabetes inpatient education that can be adjusted to individual patients' needs in order to ensure patients receive comprehensive diabetes education. Nurses in Cyprus should have structured guidelines for providing support and monitoring complications and for following up within hospitals to ensure that patients receive prompt care that might prevent further complications.

11. Relevance to Clinical Practice

Nurses working in any hospital department will care for people with diabetes daily since they occupy up to 16% of hospital beds. In this study, we involved both nurses working in the inpatient setting and people with diabetes who had experienced inpatient care to identify and understand the roles of nurses in diabetes inpatient care. This study shows that nurses and people with diabetes shared almost the same view about the roles of nurses, but still it shows the scarcity of clearly defined roles for inpatient care of type 1 diabetes. This study adds an important new dimension to this body of research which, in addition to a dearth of information on nurses' roles in providing inpatient services, lacks evidence. We suggest that there is a need to define nurses' roles regarding diabetes care, which will give nurses an understanding of what they need to do.

Author Contributions: Conceptualization, M.N.; methodology, M.N., C.S.C., E.A., E.L., M.D.; formal analysis, M.N.; investigation, M.N., E.L.; writing—original draft preparation, M.N.; writing—review and editing, M.N., C.S.C., E.A., E.L., M.D.; supervision, C.S.C., E.A., M.D.; project administration, M.N. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Reviewed and approved by the Cyprus National Bioethics Committee.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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