

Nursing Interventions that support Families affected by Type 1 Diabetes Mellitus

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Prevalence of Nursing Interventions towards Family affected by Type 1 Diabetes Mellitus

The incidence of diabetes mellitus in younger populations is a serious concern. According to the American Diabetes Association (2016), approximately 208,000 Americans 20 years old or younger have been diagnosed with diabetes. Therefore, nursing interventions for the family and patient diagnosed with type I diabetes mellitus is critical. The main focus of this project is to evaluate the effectiveness of nursing interventions such as education and therapeutic communication for the family and patient diagnosed with type 1 diabetes mellitus. Since type I diabetes mellitus is a chronic disease, it is important for family members and the patient affected learn about diabetic care, and feel supported through the process of adjusting to the initial diagnosis, and the reorganization of their lives. Evaluating the effectiveness of nursing interventions in this situation can reveal insights as to what techniques can be most effective in educating and supporting the affected families and patients.

Research Problem

What nursing interventions are most effective in treating families and children with type 1 diabetes mellitus?

Review of Literature

Martins, Ataíde, Silva and Frota (2013), conducted a qualitative descriptive study to gain understanding of the mother's perspective in regards to caring for a child with type 1 diabetes mellitus. Using semi-structured interviews, the researchers analyzed the mother's feelings related to the responsibility of caring for their affected child, and how it impacted both of their lives. Interviews consisted of three open ended questions and were audio recorded. These researchers found that having a child diagnosed with type 1 diabetes mellitus greatly impacted the lives of the mother and child and required adaptation. A common theme from the interviews was the

mothers wanted their affected child to be independent but also felt protective towards them. Other themes included siblings competing for the mother's attention, and the mothers felt they increased their focus of care towards the diabetic child. The results revealed that the mother was more likely to feel increased self-confidence in her capabilities to care for her affected child if she had family and professional support. In addition, researchers also found that having a child with type 1 diabetes affected siblings and caused jealousy as the affected child needed more of the mother's attention. Therefore, researchers urge the importance of education and support by healthcare professionals to ensure confidence and adaptation for all family members.

Konradsdottir and Svavarsdottir (2013), conducted a quantitative quasi-experimental study including a pretest and posttest to determine the impact of therapeutic communication provided by advanced nurse practitioners to families and children with type 1 diabetes. Researchers hypothesized that the parents of children with type 1 diabetes would feel they have increased support after two short sessions that included therapeutic communication by the advanced nurse practitioner. Advanced nurse practitioner interventions were based on the Calgary family-nursing frameworks. Fourteen families (13 mothers and 11 fathers; 24 parents) participated in the study and received advanced nurse practitioner interventions. Three questionnaires were used to determine the significance of the nursing intervention: the family profile inventory, general information about the children with diabetes, and the ICE-PFSQ perceived by support questionnaires.

The study results indicate that there was no significant difference regarding feelings of family support for the parents after the two sessions with the advanced nurse practitioner (Konradsdottir & Svavarsdottir, 2013). Researchers relate this finding to the limitations of small sample size, and the majority of the families had children diagnosed with diabetes almost five

years prior to the study. After going through specific participant responses to the intervention, researchers found a significant improvement of family perception by the mothers when the advanced nurse practitioner highlighted the family's strengths. The study results indicate that therapeutic communication including active listening, emotional support, education, and highlighting family strengths should be used by all nurses to encourage and empower families that have members with type 1 diabetes mellitus. (Specific content regarding therapeutic sessions was not a focus for the researchers in this study).

Aguilar, García, González, Pérez, and Padilla (2011), conducted an observational study with longitudinal, analytical, and observational aspects to evaluate the impact of healthy physical activity and diet on glycated hemoglobin (HbA1c) levels in children with type 1 diabetes. The study objectives included educating participants and their parents on appropriate diet, increasing awareness of a balanced diet and regular exercise in participants, and evaluating the advantages of implementing One Touch UltraSmart System used to manage blood sugar and HbA1c levels. Researchers used One Touch UltraSmart to take and record blood sugar levels and record activity, diet, insulin doses administered, and HbA1c levels. Thirty-seven children with type 1 diabetes participated. The study included seven educational sessions concerning glycemic management and a questionnaire completed by participants and their parents regarding their diet and exercise habits at each session.

The study results indicated that there was a significant decrease in HbA1c levels overall (Aguilar et al., 2011). Researchers found participants with higher initial HbA1c levels had the most dramatic decrease at the end of the study compared to the children with lower levels. Children who implemented a balanced diet and regular exercise consistently were shown to have significantly lower HbA1c levels. The researchers emphasize that health care personnel such as

nurses can improve a diabetic child's health through proper education regarding appropriate diet and exercise for these patients. The use of One Touch UltraSmart device can assist in diabetes management with its record-keeping of activity, insulin administration, blood sugar, HbA1c levels and its ability to assess blood sugar.

Balkhi, Reid, McNamara, and Geffken (2014), conducted a mixed-method study (with qualitative and quantitative components) to evaluate if parents with type 1 diabetic children would use online resources. Researchers hypothesized that participants in the discussion forum would be similar to the general population of parents with diabetic children. Researchers also wanted to test the belief by many physicians that discussion forums have little merit. These physicians hypothesized that online forum use would increase anxiety, stress, and poor coping of parents regarding diabetes management in their children. One hundred and two parents consented to participate in the study. Participants completed the pediatric inventory for parents questionnaire which assesses the stress level of parents related to their child's diabetes management and exacerbations. The hypoglycemic fear scale (parent version) was a questionnaire completed by participants to assess their fear of hypoglycemia occurring in their diabetic child. The Michigan diabetes research and training center's brief diabetes knowledge test is a questionnaire that was also completed by participants to assess overall diabetes knowledge. Two open-ended questions were answered to assess the level of trust they generally had towards people on the Internet and two open-ended questions were answered by participants to determine their perception of using online discussion forums.

The study results revealed that parents with a diabetic girl tended to worry more about her diabetes management and exacerbations compared to parents with diabetic boys (Balkhi et al., 2014). Also, researchers found that 84.3% of participants reported that their experiences with

discussion forums impacted the care of their diabetic child in a positive manner. Fifty three percent of parents reported they used discussion forums as a way to gain relevant diabetes knowledge. A significant difference in trustworthiness among people met online was also revealed as parents trusted people they met through discussion forums more than they did through those met on the Internet in general. There was no significant difference found between discussion forum use and HbA1c levels. Limitations of the study include resources only available to parents with internet access, lack of pretests, lack of causation, and potential for bias (self-report surveys). These researchers recommend that health care personnel such as nurses educate patients on the benefits and problems associated with discussion forums and ensure proper diabetes knowledge is being provided (Balkhi et al., 2014).

Merkel and Wright (2012), completed a qualitative descriptive study where an online platform was created with the purpose of promoting social support and self-efficacy among parents with children diagnosed with type 1 diabetes. The study included one group of nine participants that completed a pretest and posttest before and after using the web-site. The diabetes empowerment scale and the self-efficacy for diabetes scale were used to assess how well parents felt they managed their child's diabetes. The study results indicated a significant difference in pretest and posttest scores relating to social support and perceived ability to manage type 1 diabetic child. Parents felt an increase in support, leading to an increase in perceived self-efficacy in managing their child's diabetes. Limitations of the study include small sample size and a demographic limited to those with Internet access. Researchers urge nurses, nurse practitioners, and physicians to promote the use of appropriate online social support platforms for parents with children diagnosed with diabetes.

Kelo, Eriksson, and Eriksson (2013), conducted a qualitative descriptive study using the critical incident technique to assess important education aspects during hospitalization described by children with chronic diseases and their parents. Fifteen families participated in the study including 12 children and 19 parents. Children participants had the following chronic conditions: diabetes, epilepsy, asthma, and severe allergies. Both the children and parents were interviewed separately by seven trained graduating nurses. Each interview was video-taped. Fifteen total interview sessions were completed in which parents indicated that nine of these sessions were overall positive meetings. Researchers found the majority of the sessions were conducted at the time of the child's diagnosis, a time when most parents experience shock of their child's diagnosis. Shock is described as experiencing overwhelming emotions of fear, sorrow, uncertainty, confusion, desperation, panic, and denial. It can also include an inability to retain or learn new information.

Researchers analyzed and compared appropriate nursing competence, didactic competence, and interpersonal competence in the study (Kelo et al., 2013). For instance, nursing competence entails expert knowledge, bearing in mind the family situation when caring for children and families, and implementing nonpharmacological techniques to reduce fear and pain. Shock and fear experienced by families in this study were relieved by nursing competencies of therapeutic communication, support, and nonpharmacological techniques. Didactic competence includes knowledge of teaching parents and children based on their developmental level. For example, education through play and rewards was implemented for the children. Interpersonal competence is the ability to communicate well including qualities such as friendliness, patience, composure, empowerment, activeness, assertiveness, and a good sense of humor. Nurses were

evaluated for interpersonal competence by how the families' privacy, respect, and session time was maintained.

The study results indicated that shock impacted the ability to retain educational information during the hospitalization experience (Kelo et al., 2013). Researchers also found that parents felt less empowered when experiencing a lack of education regarding the child's illness. Kelo et al., (2013), suggests that this makes evaluation of family knowledge and education before discharge essential. Negative experiences of families related to ignoring the child or parent, feeling disrespected, or not being helped. Parents and children who did not participate in educational experiences had a negative impact on the hospital experience. Limitations include small sample size and potential bias (self-report of past experience). Researchers recommend that nurses caring for parents and children with chronic illnesses should be well-trained in nursing, didactic, and interpersonal competencies. They also suggest promoting feelings of empowerment by families to ensure efficient education. Last, researchers indicate that collaboration with other health care personnel such as social workers, occupational therapists, and physicians are important to promoting positive feelings and proper education among these families.

Graveling et al. (2014), conducted a quantitative predictive correlational study to assess the impact of impaired awareness of hypoglycemia in type 1 diabetic children and to assess the occurrence and manifestations of this population to find which symptoms are most accurately related to hypoglycemia awareness. Fifty-seven children along with one parent of each child completed the study. Parents and children completed questionnaires separately. An initial baseline questionnaire was completed to address any concerns. The Clarke questionnaire was used to assess the awareness and status of the child and the Gold questionnaire was used to

determine awareness of hypoglycemia. Children were classified into two groups: aware and impaired awareness based on questionnaire results. Based on the responses from the Clarke and Gold questionnaires, the intensity of manifestations relating to hypoglycemia was measured using a Likert scale. Participants recorded their blood sugars three times a day for four weeks. If the child had a glucose level below 72 mg/dL they, along with their participating parent, were asked to complete the Gold and Clarke questionnaires and to record the blood sugar level, hypoglycemia recognition, any help needed, and manifestations. Researchers also obtained the children's patient records regarding growth charts and case records to determine if the children were undergoing puberty, as this can affect diabetes care and study results. HbA1c levels were also obtained.

The study results revealed that 98.6% of children ages nine and older were aware of their hypoglycemia whereas only 25% of the children under age nine were aware (Graveling et al., 2014). A significant relationship was found between children and parents responses when using the Clarke questionnaire. The Clarke questionnaire revealed a positive correlation between children and parents with impaired awareness. Researchers discovered that children with impaired awareness of hypoglycemia were more likely to need medical attention. They also found that hypoglycemia most often occurred in the late afternoon between three and seven. All participants lacked proper recognition of hypoglycemia on varying levels. However, children adequately educated or aware of hypoglycemia were more likely to recognize when they were experiencing symptoms compared to the participants who were classified as having an impaired awareness. Also, the study showed that those with impaired awareness were more likely to be hospitalized for hypoglycemia compared to participants with normal awareness. Researchers discovered that parents of children with impaired awareness were less likely to report or

recognize autonomic symptoms such as trembling or weakness. Participants that had begun puberty had increased symptom scores from both themselves as well as their parents. In fact, symptoms of sweating and trembling had the highest significance. It was found that all children in the study lacked the ability to recognize symptoms of hypoglycemia on varying levels and was more likely to be identified by an observer, leading researchers to believe that manifestations may be more asymptomatic in children. Elements that can impact this awareness in children include distractibility, ability to retain knowledge, and level of autonomy regarding disease management. Limitations of the study include small sample size related to attrition. Researchers recommend health care personnel highlight behavioral symptoms of hypoglycemia to patients such as irritability or aggression, as these were more likely to be recognized by the parents and children in the study (Graveling et al., 2014).

Chisholm, Atkinson, Bayrami, Noyes, Payne, and Kelnar (2014), conducted an exploratory observational study to assess the impact of positive and incongruent communication between mothers and their diabetic children. Researchers hypothesized that positive communication is associated with better communication between the mother and child, and leads to improved child adjustment and adherence to the chronic condition. They also hypothesized that incongruent or inconsistent communication is associated with poor child adjustment and adherence to type 1 diabetes. Twenty-three children and their mothers participated in this study. Three 20 minute telephone interviews were conducted with the mothers. During the interviews, the mothers described the child's nutrition including dietary habits and portion sizes of meals. From the interviews, nutritional intake was analyzed, including the intake of non-milk extrinsic sugars which are simple sugars found in foods such as cakes and fruit juices. HbA1c was also assessed to evaluate blood sugar control. The Child Behavior Checklist-Parent Report was

completed by the mothers to assess emotional, behavioral, and total problems with diabetes management. In addition, researchers developed a board game for the children to use to assist with birthday party food selection. The board game was used to assess parent-child collaboration and problem-solving as it relates to diabetic diet preferences. A videotape analysis based on the Couples Interaction Scoring System was used while the mother and child completed the board game to assess the quality of communication and consistency between verbal and non-verbal communication. After completion of this activity, children scored a one or negative one based on their overall experience (positive or negative). Non-verbal behaviors from the activity were scored as one (positive) or negative one (negative). Positive communication was scored based on the content, affect (emotion), and context with one point going to each component resulting in a highest possible score of three. Incongruent communication included two types: positive verbal communication with negative non-verbal communication and negative verbal communication with positive verbal communication. The number of instances where incongruent communication occurred was counted and converted into a percentage.

The study results found a larger number of the children reported a high score of total problems associated with adjustment and management of diabetes (Chisholm et al., 2014). Researchers found a possible link between parent incongruent communication and positive communication by the child. Using more positive communication by the parents was associated with less incongruent communication by the child. Positive communication was correlated with fewer behavioral problems. Findings relating to the board game activity were not significant. Communication variables as they related to the child's HbA1c levels were not statistically significant. However, 65% of child participants surpassed the recommended daily intake of non-milk extrinsic sugars indicating the importance of communication as it relates to diabetes

education and management. Limitations of the study include small sample size, lack of randomization, and lack of control group. Researchers suggest further studies be completed using a large sample size. They also recommend healthcare professional ensure hypoglycemia awareness in affected families through education (Chisholm et al., 2014).

Research Evaluation

Out of the studies reviewed, one was a level II quasi-experimental study, four were level IV descriptive studies, one was an exploratory observational study, and one was a survey study. Common insights with reviewed studies include the impact of parents managing their child's diabetes and education and communication techniques. For instance, a reoccurring finding was the importance of acknowledging and addressing the parents' or caregiver's concerns in order to promote proper diabetes management of the child. Researchers found implementing online interventions were cost-effective, as well as the therapeutic communication and education provided by the nurses. Limitations of these studies include small sample size, lack of randomization, attrition, and a limited sample diversity. Recommendations for future research include selecting a larger sample size, having more effective control within the study, implementing fixed randomization, and incorporating nurses into the experiment (direct nursing-patient care study).

Clinical Evaluation

Nursing interventions highlighted in this review include encouraging the use of online forums and support groups, comprehensive diabetes management software such as One Touch UltraSmart System, and acknowledging parent and child strengths in diabetes management. Communicating consistently (congruent communication) when interacting with this population has also found to play a significant role in outcomes of diabetic children. Also, teaching the

patient and their parents regarding complications, especially easily recognized symptoms such as behavioral symptoms can help to prevent hospitalization and improve diabetes management.

Summary

The incidence of type 1 diabetes is increasing in children (American Diabetes Association, 2016). The most common finding among the studies is the impact parents have on their child's diabetes management. Therefore, cost-effective, time efficient nursing interventions such as acknowledging the parents' concerns, highlighting the family's strengths, and providing resources (online and comprehensive management technology) can reduce diabetes complications and promote effective management. Teaching the caregiver and child about diabetes appropriate diabetic nutrition and manifestations of complications (hypoglycemia and hyperglycemia) was also emphasized by the studies. More studies should be done to explore the most effective education and communication techniques provided by nurses to families and children with type 1 diabetes.

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