A Study on the Knowledge of SBAR of Clinical Nurses in Hospital Blood Glucose Management

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Abstract: Objective: To investigate the clinical nurses' knowledge of SBAR's (Situation, Background, Assessment, Recommendation) blood glucose management in a large hospital of Guangzhou and to provide a basis for the training and promotion of SBAR's blood glucose management knowledge in the hospital. Methods: 100 clinical nurses from a large hospital of Guangzhou were selected as the research objects. Data were collected by means of questionnaire survey to investigate and analyze the clinical nurses' knowledge of SBAR's management of blood glucose. Results: The awareness rate of SBAR in clinical nurses was 42.55%. The awareness rate of SBAR in the management of blood glucose in hospital was 23.40%, and the clinical significance of SBAR in the management of high and low blood glucose was 39.36%. With the improvement of educational background, professional title and working years, the scores of nurses on SBAR related knowledge gradually increased, and the higher education background had a significant impact on SBAR related knowledge ($P < 0.05$). The scores of nurses who received SBAR training were higher than those who did not received ($P < 0.01$). The knowledge most desired by clinical nurses in the management of in-hospital blood glucose was analyzed by SBAR (61.43%), and the clinical significance of SBAR in the management of non-endocrine blood glucose (50%). Conclusion: clinical nurses' knowledge of SBAR management of blood glucose in the hospital is relatively inadequate, and unified norms and standards should be formulated in terms of SBAR model analysis of high and low blood glucose and timely treatment.

Keywords: SBAR Management, Clinical Nurse, Blood Sugar, The Investigation and Study

1. Introduction

With the rapid development of economy, people's material standard of living has been gradually improved, and their dietary pattern and structure have been gradually changed, The number of diabetes patients has also increased year by year. Many diabetic patients is not admitted to the endocrine department due to other diseases. Now many hospitals are carrying out the hospital blood glucose management led by endocrine department. In cross specialty blood glucose management, effective communication between endocrinologists, non endocrinologists and patients is very important. As it happens, the application of SBAR communication can not only effectively improve the communication between departments, but also improve the ability of nurses to observe the condition, as well as the ability of critical thinking and communication [1-3]. In the 1990s, the communication mode of SBAR was first introduced into the

medical field by Kaiser Permanente [4]. It is a communication mode that uses the corresponding standardized communication mode among the medical staff in emergency situations to achieve the communication effect and promote the hospital patient safety culture [5]. The communication mode of SBAR mainly includes four parts. S (Situation): the current situation, including the general situation of patients and the existing problems; B (Background): including the patient's chief complaint, hospitalization diagnosis, and changes in the patient's condition after admission; A (Assessment): including the patient's vital signs and changes in the patient's condition; R (Recommendation): Recommendation on problem handling [6-7]. The communication mode of SBAR is embodied in all aspects of nurses'work, mainly involving nurses' reporting to doctors, patient transfer and handover, nursing transfer and shift, and nursing education [8]. Therefore, to improve the level of SBAR knowledge of clinical nursing workers and apply it to the in-hospital blood glucose management can not only reduce the fluctuation of patients' blood glucose, but also ensure the stability of patients' blood glucose [9]. In addition, it can effectively promote the degree of cooperation between doctors and nurses, improve the satisfaction of medical patients and the quality of nursing service in the hospital [10-11], which has become a focus of attention in the management of blood glucose in the hospital in recent years. The purpose of this study was to investigate the knowledge and practice status of clinical nurses on SBAR blood glucose management in patients with diabetes in hospital, so as to find out the problems in blood glucose management in hospital and provide a basis for improving the training of SBAR blood glucose management knowledge in hospital of clinical nurses.

2. Data and Methods

2.1. Research Objects

In this study, 100 clinical nurses who met the inclusion criteria in a tertiary hospital in Guangzhou were selected from June to July, 2018, including 2 males and 98 females, aged (31.19 ± 7.14) years old and working years (9.80 ± 7.83) years. Inclusion criteria: registered nurses who have been working in the clinic for more than 0.5 years. Exclusion criteria: nurses in internship or further study; Nurses on maternity leave, nursing

leave, sick leave, rotation or other reasons not on duty. All subjects gave informed consent and volunteered to participate in the survey.

2.2. Research Methods

2.2.1. Questionnaire Design

The questionnaire is divided into three parts. The first part is the general information of the respondents, including name, gender, age, professional title, educational background and working years. The second part is a survey on the source and demand of SBAR knowledge, including whether you have received SBAR knowledge training and the main channels of knowledge sources, including the training of endocrinology diabetes specialist nurses, the training of diabetes liaison nurses in the department, self-study on the Internet and other training lectures in the hospital. Knowledge requirements include the definition and classification of SBAR, clinical analysis and application, and others. The third part is about nurses' knowledge of SBAR, including the basic concepts, components and contents of SBAR, as well as the application of clinical high and low blood glucose management. 10 points will be awarded for each correct answer out of a full mark of 60. No points will be awarded for wrong answers.

2.2.2. Research Methods

The research team made a questionnaire and conducted the questionnaire explanation and training for the selected clinical nurses. Finally, the questionnaire was filled in and collected 1 hour later. The research team summarized the questionnaires and analyzed the data.

2.2.3. Statistical Analysis

SPSS16.0 software was used for statistical analysis. The measurement data were expressed as ($x\pm s$) by t-test, and the counting data were tested by χ^2 test. $P<0.05$ indicated that the difference was statistically significant.

3. Result

3.1. General Information of the Clinical Nurses

In this study, a total of 100 questionnaires were distributed and 98 were recovered, with a recovery rate of 98% and an effective rate of 95%. (Table 1)

Table 1. *General information of the clinical nurses (n=95).*

project		cases (n)	Constituent ratio (%)
Gender	male	2	2.12
	female	93	97.89
Age	20-29 years old	48	50.53
	30-40 years old	29	30.53
	>40 years old	18	18.95
Educational background	secondary	2	2.11
	Associate degree	24	25.26
	Bachelor degree	67	70.53
	Master's degree	2	2.11
Professional ranks	Nurse	32	33.68
	Nurse practitioner	46	48.42
	Nurse-in-charge	16	16.84
	Associate senior nurse	1	1.05

project		cases (n)	Constituent ratio (%)
length of service	<3 year	18	18.95
	3-5 year	21	22.11
	6-10 year	19	20.00
	>10 year	37	38.95
received training	yes	40	42.11
	no	55	57.89

3.2. The Rate of Clinical Nurses' Knowledge of SBAR

The awareness rate of SBAR was 42.55% for the basic concepts, main components of SBAR was 23.40% for the blood glucose management and 39.36% for the clinical significance of SBAR in the management of high and low blood glucose. (Table 2)

Table 2. *The rate of clinical nurses' knowledge of SBAR.*

project	Know (n)	Unknown (n)	Awareness rate (%)
1. The concept of SBAR	40	55	42.55
2 The main components of SBAR	40	55	42.55
3 SBAR method can be used in blood glucose management	22	73	23.40
4 Clinical significance of SBAR in blood glucose management	37	58	39.36

3.3. Approaches and Requirements for Clinical Nurses to Acquire Knowledge Related to Blood Glucose Management SBAR

The main sources of knowledge related to SBAR management for clinical nurses in the hospital are the training courses for diabetes specialist nurses in the department of endocrinology (41.25%), the training courses for diabetes liaison nurses in the department (22.5%), the online self-study courses (3.75%) and other training lectures in the hospital (43.75%). The knowledge that clinical nurses most wanted to acquire in the in-hospital blood glucose management was the application of SBAR model to analyze high and low blood glucose and its application (61.43%), and the clinical significance of SBAR model in the non-endocrine blood glucose management (50%).

3.4. Univariate Analysis of Clinical Nurses' Knowledge of SBAR

The study subjects were stratified according to their educational background, professional title, working years and whether they had received relevant training. The results showed that with the improvement of educational background, professional title and working years, the scores of nurses on SBAR related knowledge gradually increased, and the scores of nurses with different academic degrees on SBAR related knowledge were different ($P < 0.05$). There was a difference in SBAR knowledge acquisition score between nurses with and without training ($P < 0.05$). (Table 3)

Table 3. *Univariate Analysis of clinical nurses' knowledge of SBAR.*

Characteristics		cases	Score ($\bar{x} \pm s$)	statistic value	P value
Educational background	secondary	2	0.00+0.00	2.976[2]	0.036
	Associate degree	24	15.83+19.09		
	Bachelor degree	67	23.73+23.02		
	Master's degree	2	55.00+7.07		
professional ranks	nurse	32	17.50+21.40	2.261[2]	0.087
	Nurse practitioner	46	21.09+21.42		
	Nurse-in-charge	16	30.63+25.42		
	Associate senior nurse	1	60.00+0.00		
length of service	<3 year	18	22.22+21.30	0.752[2]	0.524
	3-5 year	21	16.19+19.87		
	5-10 year	19	22.63+23.06		
	≧10 year	37	25.41+24.11		
Training received	yes	40	38.00+20.66	7.451[1]	<0.001
	no	55	10.36+15.51		

Note: 1) t value; 2) F value

4. Discussion

As is known to all, care of three effective communication is particularly important for the diagnosis and treatment, SBAR communication mode is a kind of problem oriented report model, it is widely used in clinical and education fields [12], especially in the process of cross major cooperation, structured communications plan can improve the clarity of communication, education, satisfaction and motivation [13] In order to promote effective communication between nurses and doctors, SBAR, a well-known structured communication tool which is widely used in the daily work of medical care. It can make the communication more complete, more accurate and clearer between doctors and nurses.

In recent years, SBAR communication model has been widely used in clinical nursing work which has achieved obvious results. In addition to improving communication among medical staff, it also can optimize the knowledge structure of nurses and make quick and accurate judgment of problems. The observation quality of patients' condition is significantly improved which makes the medical cooperation more harmonious [14]. It can not only guarantees the medical safety but also enhances the professional recognition of nurses in the aspects of self-realization, development prospect and social status [15]. SBAR communication mode used most commonly in the nursing work. It mainly involves four aspects: the nurse reports the condition to the doctor, the patient transfer and handover, the nursing shift handover and the nursing education. Gu Tianming's study has shown that using SBAR communication model is applied not only improving clinical nurses'critical thinking ability while the clinical nurses'ability to communicate [16]. But it is lack of special SBAR communication mode applied in hospital blood sugar management research. With the increasing number of diabetic patients, they are often admitted to a non-diabetic specialty for the first time due to the need of the disease. Some patients need to use insulin pumps for treatment. Then, many hospitals are trying to carry out the interdisciplinary and multidisciplinary cooperation mode of blood glucose management in the hospital. Under the guidance of this mode, effective communication is very important (for endocrinologists and non endocrinologists as well as diabetic patients outside the Department). Our goal is to make blood sugar reach the standard as soon as possible, reduce the frequency of hypoglycemia, and ensure the safety of patients. Therefore, the purpose of this study is to investigate clinical nurses' knowledge of SBAR blood glucose management in the hospital. The results of this study are as follows:

First of all, the study showed that different degree, job title, to participate in the training and working fixed number of year of SBAR related knowledge is also important influencing factors [17], namely, with record of formal schooling, job title, working years, clinical nurses to SBAR also gradually improve related knowledge points, and the higher degree of influence to master relevant knowledge SBAR more obvious ($P < 0.05$). Possible reasons: academic education is the premise for clinical nurses to master theoretical knowledge, and the level of professional knowledge is related to the level of educational background. Nurses with higher educational background receive more professional knowledge and more solid basic knowledge than nurses with lower educational background. Moreover, those with a high academic degree also have a strong understanding ability, learning ability and clinical thinking. The longer the working years, the higher the professional title of nurses, the more clinical experience, self-discipline and responsibility than the less qualified nurses are stronger, therefore, the score is relatively higher.

The second, In addition to the influence of education background, professional title and working years, the scores of nurses who had received SBAR training were higher than

those who did not ($P < 0.01$). The conclusion in clinical hospital SBAR blood sugar management practice are confirmed, namely SBAR related knowledge on a regular basis for floor clinical nurse short-term training can significantly improve the nurse's perception of SBAR and the degree of master of knowledge, application of SBAR pattern for blood sugar management consciousness gradually improve, at the same time reduce the incidence of hospitalized patients with diabetes low blood sugar, better safeguard the health of the patient.

In addition, this study showed that clinical nurses had a relatively insufficient knowledge of SBAR and could not meet the needs of clinical work of blood glucose management in the hospital. It is suggested that managers should attach importance to this aspect of training and encourage them to learn the latest developments of SBAR communication mode in the nursing field at home and abroad by attending academic meetings and consulting literature, so as to improve the mastery of SBAR knowledge by clinical nurses in the management of in-hospital blood glucose.

Finally, under the guidance of this model, for endocrinology outside of health and the endocrine care and diabetic patients with effective communication between the three parties is particularly important [18]. Therefore, we suggest that the managers should be in the emphasis on diabetes specialist nurse training. The endocrine department blood sugar management training should be on a regular basis and attached great importance to the application of SBAR model to analyze the cause of the blood glucose fluctuations while taked care of the three parties to communicate effectively in order to effectively control blood sugar in patients with safely, better and faster to make target blood glucose control is at target, at the same time reduce the risk of hypoglycemia, as soon as possible reduce the number of hypoglycemia occurred to ensure the safety of patients [19].

Overall, There are still some limitations in this study. For example, the number of SBAR in hospital blood glucose management is limited, and the number of cases is relatively small which needs to be further studied. In the next step, we will design a standardized SBAR communication template based on the survey and our own characteristics to conduct clinical exploration. Through the SBAR communication model, we will build effective communication between doctors and patients, improve and enhance the quality of care for non endocrine diabetic patients in the hospital which can ensure the effect of blood glucose treatment in the hospital.

5. Conclusions

SBAR communication model has been widely used in clinical nursing work. In addition to improving the communication between medical staff, it can also optimize the knowledge structure of nurses and make quick and accurate judgment of problems. However, clinical nurses' knowledge of SBAR management of blood glucose in the hospital is relatively inadequate, It is suggested that managers should pay attention to this aspect of training, so as to improve

the level of clinical nurses' knowledge of SBAR in blood glucose management in hospital. In order to improve the quality of care for inpatients with diabetes and to better maintain the health of patients, unified norms and standards should be formulated in terms of SBAR model analysis of high and low blood glucose and timely treatment.

Ethics Approval and Consent to Participate

Not applicable.

Consent for Publication

Not applicable.

Competing Interests

The authors declare that they have no competing interests.

Fund

Author Contributions

Nijun Jiang and Xixi Luo are co-first authors.

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