

Participation of Primary Care Nurses in the Prevention of Chronic Non-Communicable Diseases in the Republic of Kazakhstan: A Cross-Sectional Study

Abstract

Background: Chronic diseases are a huge threat to public health in Kazakhstan and around the world. Many deaths can be prevented by using evidence-based behavioral interventions. Nurses, as the most numerous health care workers, can perform behavioral therapy for the prevention of Non-Communicable Diseases (NCDs). This study was conducted in order to explore the behavioral interventions performed by nurses, to analyze current problems, barriers and the attitude of nurses to these activities. **Materials and Methods:** A cross-sectional study was conducted among 260 nurses in the city of Nur-Sultan from 2019 to 2020. The sample was calculated using a formula and simple random sampling. The study was conducted using a specially compiled questionnaire. Descriptive statistics were chosen as a statistical method. Pearson's Chi-square criterion was used to identify a statistically significant relationship between variables. **Results:** Among 260 nurses, 208 participants (80%) had the desire to conduct behavioral interventions among patients. Most nurses do not have enough time to conduct behavioral interventions. A short work experience affects to a greater extent nurses use passive training methods. Almost half (47.30%) of nurses rate their level of knowledge about the real effects of drugs, tobacco, alcohol, and preventive measures on the body as "average". **Conclusions:** The work of nurses on the prevention of NCDs is not performed enough due to lack of working time and available domestic literature, heavy workload. Behavioral therapy should be based on reliable scientific evidence, which can be achieved through the development of clinical guidelines and continuous training of nurses.

Keywords: Behavioral therapy, cross-sectional study, Kazakhstan, noncommunicable diseases, nursing

Introduction

This article is devoted to the study of the conduct of behavioral interventions by nurses in Kazakhstan for the formation of a healthy lifestyle of the population and the rejection of bad habits, which are the main risk factors for chronic diseases. The difference of this study is that the authors used the questionnaire "Work of nurses with patients with behavioral risk factors (smoking, alcohol)," specially designed for the purposes of this study only. All 19 questions of the questionnaire were compiled on the basis of international guidelines. In addition, in the vast expanses of the former Soviet Union, this is the only study devoted to the study of behavioral interventions conducted by nurses of primary health care organizations. Kazakhstan is a middle-income country

where the development of primary health care remains at a low level. Taking into account the above statistics on the widespread prevalence of bad habits in Kazakhstan, as well as the inability of the health care system to positively influence the lifestyle of the population, it is necessary to conduct similar studies that will further help expand the range of responsibilities of nurses.

Every year, NCDs kill 15 million people between the ages of 30 and 69. Cardiovascular diseases account for the largest share of these deaths.^[1] More than 85% of these premature deaths occur in low-and middle-income countries.^[2] To ensure a high quality of care for patients with chronic diseases, it is necessary to ensure the correct ratio of the number of health workers

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relative to patients. Acute shortages of doctors and nurses, especially in rural areas, are widespread in both low-and many middle-income countries. This fact also limits the ability of the traditional model of medical care to combat the global epidemic of NCDs.^[3] For example, in Kazakhstan in 2015, the mortality rate from NCDs was 486 deaths per 100,000 adults, compared to an average of 380 deaths per 100,000 in the World Health Organization (WHO) European Region.^[4-6] Chronic diseases, such as heart failure, chronic obstructive pulmonary disease, stroke, often result from unhealthy behaviors, including tobacco use, and excessive alcohol consumption.^[7] Tobacco use and alcohol abuse are widespread among the countries of the former Soviet Union. Moreover, alcoholism is a serious threat to public health in post-Soviet countries, including Kazakhstan.^[8] The prevalence of alcohol consumption in Kazakhstan in 2015 was 24.2%.^[9] In addition, Kazakhstan ranks first among Central Asian countries in terms of alcohol consumption.^[10] Tobacco use in Kazakhstan is also a serious concern, as according to 2019 data, 42% of men and 5% of women smoke every day.^[6] It is known that in developed countries, the use of behavioral interventions at the primary health care level has been very effective in reducing smoking^[11] and alcohol abuse.^[12] There is a wealth of evidence that a person's attitude to bad habits can be effectively changed by applying evidence-based behavioral interventions.^[13-15] Based on the experience of developed countries, behavioral interventions of nurses are more effective when they work on an interdisciplinary basis with other medical professionals, such as doctors, pharmacists, and psychologists. Thus, coordinated assistance should be provided.^[16-18]

In recent years, special attention has been paid to the development of nursing. In Kazakhstan, the process of reforming nursing has begun relatively recently. So, since 2014, a pilot project has been implemented to form a new model of nursing service in the republic. The reform involves the training of nursing professionals in accordance with European directives. Nurses, as the most numerous health care providers, are well placed to support efforts to promote public health and prevent NCDs.^[19] As early as 1961, a WHO report stated that the part of the nurse's work that she can do by communicating directly with patients, their families, or entire populations, bringing them the knowledge necessary for disease prevention and health protection, is ignored.^[20] However, to this day, there is a problem with the involvement of nurses in a multidisciplinary team for the implementation of behavioral therapy. The purpose of this work was to study the behavioral interventions carried out by nurses, and the analysis of the attitudes of nurses, problems, and barriers to carrying out this important work for NCDs in Kazakhstan.

Materials and Methods

A quantitative observational cross-sectional study was conducted, which was held from 2019 to 2020. Based on

a study by *Shishani et al.*,^[21] and considering 5% margin of error, 95% Confidence Level (CI) and the probability of a 10% attrition in samples. For this study, a sample of 260 nurses was recruited in the city of Nur-Sultan. Inclusion criteria: nurses working in primary health care, minimum work experience of 5 years, informed consent of the nurse. Exclusion criteria: work in a hospital. The data were collected from March 2019 to February 2020 using the questionnaire «Work of nurses with patients with behavioral risk factors (smoking, alcohol)», which was developed according to the objectives of the study. The questionnaire developed by the authors was granted copyright by the National Institute of Intellectual Property (No. 6139 of September 25, 2019). A face-to-face survey was conducted. The questionnaire consisted of 19 questions. The approximate time to complete the questionnaire was 10 minutes. If necessary, the respondents were provided with additional information related to the questionnaire questions. The data were collected using the questionnaire «Work of nurses with patients with behavioral risk factors (smoking, alcohol)», which was developed by the authors of this work and approved by the ethics committee. The questionnaire items on behavioral activities were compiled on the basis of international guidelines on this topic.^[22-25] The questionnaire was presented on 2 pages and consisted of 19-closed-type questions. The questionnaire begins with collecting data on gender, age, duration of work as a nurse, and level of education. The questionnaire was designed in such a way as to minimize the ambiguity of the answers chosen by the respondents (e.g., answer options with negative wording, various formats of answer options, etc.). 10 questions were devoted to identifying those behavioral measures that nurses use in their daily practice to prevent bad habits of patients. Another 5 questions identified the barriers and limitations that prevent nurses from using their full potential in the fight against NCD, the remaining questions were devoted to determining the attitude of nurses themselves to this problem. The questionnaire questions were given in the affirmative form, followed by a choice of one of two answer options: “yes” and “no.” In all questions, participants could choose only one answer option.

To assess the content, level of complexity, clarity of the questionnaire, the tool was sent to 5 senior nurses of Nur-Sultan city hospitals, and corrections were made after receiving comments. After analyzing the data, the Cronbach's alpha coefficient for the entire questionnaire turned out to be 0.71. Statistical processing of the results was carried out using Statistical Package for the Social Sciences version 20.0 software (Statistical Package for the Social Sciences, version 20; IBM, Armonk, NY, USA).

Descriptive statistics and logical statistics (correlation tests) were used for data analysis, such as the Pearson correlation coefficient, for example, the Pearson Chi-squared criterion was used to test the relationship between the level of

education and work experience with the availability of free time and the desire to work with the harmful habits of patients, respectively.

Ethical considerations

Prior to the start of the study, ethical approval was obtained from the Local Bioethical Committee of the University (Protocol No. 4 of December 20, 2018). All aspects of this study were carried out in accordance with the 1964 Helsinki Declaration on Ethical Standards. All participants of the study were informed about the objectives of the study before conducting the survey and signed an informed consent to participate. The survey was anonymous. Before starting the survey, the study participants were warned that the results obtained during the survey will not entail negative consequences for them, the answers will be used in a generalized form and only in this study, confidentiality is guaranteed.

Results

260 nurses working in primary health care organizations in Nur-Sultan took part in the anonymous survey. 249 (95.80%) of them were women, and 11 (4.20%) were men. The middle age of nurses was 35.40 (7.10) years. Average length of work experience was 11.60 (5.80) years. Nurses with an applied or academic bachelor’s degree (higher nursing education) made up the majority of the nurses surveyed (53%); the rest of the nurses had a secondary education [Table 1]. The study found that 208 (80%) nurses agree that a nurse should conduct behavioral interventions among patients who have bad habits. However, 150 (57.70%) nurses noted that they do not have free time to carry out sanitary-educational work among patients, and 105 (70.10%) of them had a minimum work experience of 1 to 10 years ($\chi^2 = 9.21, df = 1, p < 0.001$). 91 (35%) nurses also indicated that the nurses’ ability to conduct behavioral interventions is limited due to the lack of methodological recommendations and nursing manuals for teaching patients in Kazakh and Russian, which are spoken by the population of Kazakhstan, and 72 (27.70%) participants noted the absence of an appropriate provision on conducting behavioral interventions with patients in the list of job responsibilities [Table 2].

Only, 60 (23%) nurses use methodological recommendations, educational literature based on the principles of evidence-based nursing practice, for working with patients who have bad habits. The majority of respondents, exactly 123 (47.30%) nurses rated as «average» their level of knowledge about the real effects of drugs, tobacco, and alcohol on the body and measures of prevention, control, and treatment, 69 (26.60%) nurses rated as «sufficient», 42 (16%) nurses—«high» and 26 (10.10%) nurses—«low» [Figure 1].

Most of the nurses surveyed, namely 158 (60.80%) nurses claim that they have never received educational

Table 1: Description of the study participants

	n (%)
Gender	
women	249 (95.80)
men	11 (4.20)
Age (years)	
18-25	40 (15.38)
26-35	171 (65.80)
36-50	38 (14.62)
50+	11 (4.20)
Work experience (years)	
1-10	145 (55.73)
11-20	104 (40)
21-30	9 (3.47)
31+	2 (0.80)
Level of education	
applied bachelor’s degree	65 (25)
academic bachelor’s degree	73 (28)
secondary education	122 (47)

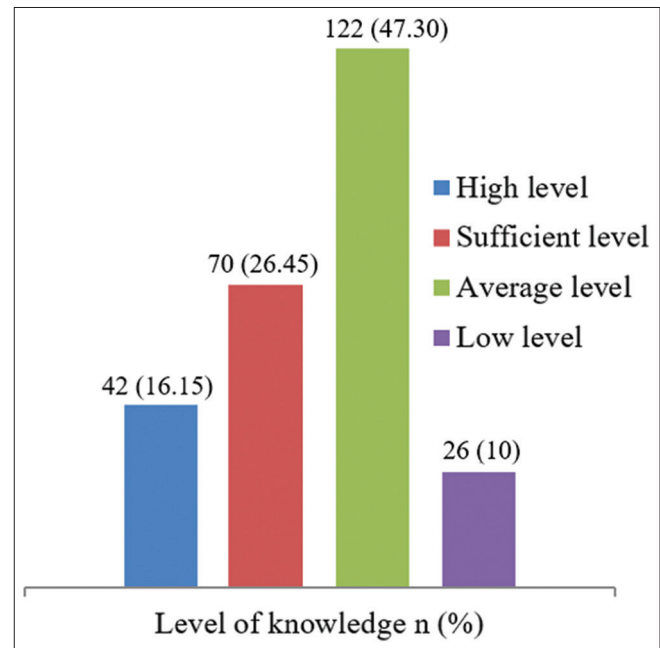


Figure 1: Self-assessment of the level of knowledge

courses and/or advanced training in the formation of a healthy lifestyle among the population. At the same time, 119 (45.60%) participants noted that they regularly provide patients with printed informative material (videos, audio recordings, brochures, newsletters, memos, etc.) containing information about the dangers of smoking and alcohol, that is, they use various passive methods, avoiding behavioral interventions. But such active behavioral interventions as motivational interviewing are carried out by much fewer nurses, only 81 (31%) respondents. Nurses were asked how often they conducted routine consultations or conversations with patients about quitting smoking and drinking [Figure 2].

Table 2: Questions on the identification of barriers in the implementation of behavioral measures

Statements	Agree n (%)	Disagree n (%)
Lack of sufficient free time to carry out sanitary and educational work among their patients	148 (57.69)	112 (42.31)
Lack of methodological recommendations and nursing manuals in Kazakh and Russian	91 (35)	169 (65)
The absence of an appropriate position in the list of functional duties of a nurse	72 (27.72)	188 (72.28)
Lack of educational courses and advanced training on the formation of a healthy lifestyle among the population	158 (60.80)	102 (39.20)

Table 3: Questions concerning behavioral activities carried out by a nurse

Statements	Yes n (%)	No n (%)
I use methodological recommendations, educational literature based on the principles of evidence-based nursing practice to work with patients who have bad habits.	60 (22.80)	200 (77.20)
I regularly provide patients with printed informative material (videos, audio recordings, brochures, newsletters, memos, etc.) containing information about the dangers of smoking and alcohol	118 (45.85)	142 (54.15)
I conduct motivational interviewing on changing the attitude of patients to bad habits	81 (31.20)	179 (68.80)
I use specialized questionnaires to identify the patient's problems with tobacco and alcohol	112 (43.23)	148 (56.77)
I discuss with patients the strategy of giving up cigarettes and alcohol and the planned date of refusal	138 (53.01)	122 (46.99)
I conduct conversations with family members of smokers, alcohol-consuming patients about further motivation for quitting smoking and alcohol	129 (49.60)	131 (50.40)

About half of the respondents, namely 112 (43%) nurses use specialized questionnaires in their practice to identify the patient's problems with tobacco and alcohol. However, 182 (70%) nurses said that they are not familiar with such questionnaires as CAGE, AUDIT, and the Fagerstrom test, which are among the most common and accurate tests for assessing alcohol and tobacco consumption.

More than half (138 (53%)) of the nurses surveyed regularly discuss with patients the strategy of quitting cigarettes and alcohol and plan the date of refusal, and 129 (49.60%) nurses even conduct conversations with family members of smokers who consume alcohol patients about the further motivation for quitting smoking and alcohol [Table 3]. At the end of the survey, 196 (75.40%) nurses expressed their agreement that, with well-organized work of nursing staff, it is possible to reduce the prevalence of bad habits among the population, and most of those who agree, namely 133 (67.90%) nurses have an applied or academic

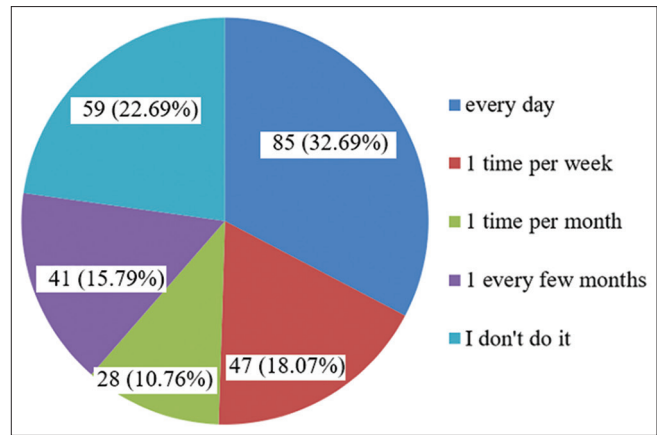


Figure 2: Frequency of consultations or conversations with patients

bachelor's degree (higher nursing education) ($\chi^2 = 9.21$, $df = 1$, $p < 0.001$).

Discussion

The aim of this work was to study the behavioral interventions carried out by nurses and to analyze the attitude of nurses, problems, and barriers to carrying out this important work to combat NCDs in Kazakhstan. As a result, we found that the work of nurses on the prevention of NCDs in Kazakhstan is not carried out enough or not at all. Considering the experience of advanced countries, it can be said that continuous professional training of nurses, their use of behavioral therapy strategies, as well as the development of clinical recommendations will be effective steps towards reducing prevalence of chronic diseases.

According to the results of a study that we conducted, most nurses do not have enough time to conduct behavioral interventions. This finding is consistent with the results of another study, which also noted the large workload of nurses, which does not allow 98% of nurses to spend more time with patients for educational purposes.^[26] In addition to the lack of time, an important barrier for nurses is the lack of methodological recommendations and nursing manuals for teaching patients in Kazakh and Russian. Only a few nurses, as our study shows, have received the necessary training to conduct evidence-based interventions. Nurses' understanding of the term «health promotion» was limited, and the health promotion strategies described were narrow. Their perception and description of health promotion were more in line with the traditional approach to health education. Overall, health improvement was reported to occur infrequently and was added if the nurse had time.^[27] Nurses for behavioral therapy need to improve their level of knowledge, as few nurses can know about the destructive effects of alcohol and nicotine on human health, about the pathogenesis of various nosologies including lung cancer, larynx, oral cavity, pharynx, esophagus, pancreas, stomach, kidney, bladder, cervix, chronic obstructive pulmonary disease, coronary heart disease, diseases of the

cardiovascular, respiratory systems, diabetes, malignant tumors, etc.

In addition, our study showed that only a smaller proportion of the nurses surveyed regularly provide patients with reference and information material (videos, audio recordings, brochures, newsletters, memos, etc.), conduct motivational interviews on tobacco and alcohol withdrawal, and use specialized questionnaires to assess tobacco and alcohol dependence. The nurses surveyed prefer to use passive methods, avoiding active interventions, whereas in the study conducted by RM Becker,^[28] nurses used group classes, home visits, individual and collective care, highlighting the presence of interdisciplinary work, especially between nurses and doctors.

Despite the active reform of nursing in Kazakhstan and many international guidelines that could serve as a basis for training nurses in Kazakhstan, most of the nurses we interviewed noted the lack of appropriate training in methods of forming a healthy lifestyle. Nurses are interested in spending more time on NCDs prevention, as many of them feel they need to work with behavioral risk factors and change their patients' habits. Nurses around the world can play an important role and work with a wide range of people involved in the prevention and treatment of these chronic diseases.^[27]

Our research has some limitations. The sample of nurse practitioners was not large, with only 260 nurses participating in the study. The study is limited to nurses who work and live only in the city of Nur-Sultan, the capital, and therefore, the results cannot be extrapolated to nurses from other cities of the republic. The topic of behavioral therapy conducted by nurses in other cities and even countries is also worth studying. As the health system is constantly evolving, other important issues may need to be explored. Management of behavioral risk factors may involve a variety of interventions, depending on the practice environment, patient population, and community needs, as well as the availability of sustainable resources to address these issues.

Conclusion

The key finding of this study is that the work of nurses in the prevention of NCDs is not done enough or not at all, because there are certain problems and barriers to conducting behavioral activities, such as lack of working time, due to heavy workload in the workplace of nurses in Kazakhstan.

For effective interventions to address behavioral risk factors, nurses need to be aware of intervention strategies (e.g., to assess problems related to smoking and alcohol, using ready-made specialized questionnaires (CAGE, AUDIT, Fagerstrom test, etc.). The heads of organizations of primary health care should send nurses for training in the formation of a healthy lifestyle among the population,

and also consider the possibility of adapting international clinical nursing guidelines on the conduct of behavioral therapy. The role of nurses in primary health care needs to be expanded.

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Conflicts of interest

Nothing to declare.

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