

CHECK LIST AS A “TRANSPORT CONTROL MECHANISM FOR PATIENT INFORMATION” AS PART OF IMPROVING THE QUALITY AND SAFETY OF HEALTHCARE

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Abstract. The current situation in the field of the use of the transport control mechanism of patient information – checklists, their importance for safe and quality health care, current trends in this area.

Goals and tasks: Find out the attitudes of nurses to checklists depending on the workplace where nurses work. To find out key information in relation to checklists – nurses’ knowledge of checklists, the level of use of checklists in the conditions of clinical practice and the opinions of nurses on the impact of the use of checklists in relation to the quality of health and nursing care.

Methods: The main method was a questionnaire of its own construction, a method of literary analysis of documents, statistical methods used: Chi-square test and Cramer’s V.

Results: The correct answer is a document used to ensure safe and high-quality nursing care, reducing the incidence of failures caused by the human factor” was indicated by 98.06% of respondents. Using a “Yes, Sometimes” checklist at their workplace was reported by 34.95%; “Yes, it is regularly part of the nursing documentation” said 31.07% of respondents; “No” was stated by 19.42%; “I don’t know,” said 14.56% of respondents. The importance of using checklists “I consider very important in providing quality nursing care” was stated by 64.08% of respondents answered “I agree”; “strongly agree” said 20.39%; “disagree” was stated by 14.56%; 0.97% said “disagree at all”. The opinions of the respondents in relation to their workplace (A = surgical disciplines + ICU and B = standard nursing unit) were not confirmed, we accept the zero H_0 i.e. “There is no significant relationship between the attitude of nurses to the check-list and their workplace” and we reject the alternative H_a .

Applicability: To implement our findings into the programs of further education of healthcare professionals, to motivate a change in the approach in relation to the use of checklists not only on a passive level as an executive link – executor of regulations (health worker), but as an active member of the health care team, who

reflects the changes and needs that need to be made directly by incorporating these current needs into the content of the checklists, transforming the needs into the content of the checklists with their With subsequent logical steps and this active approach, to permanently increase the safety and quality of the health care provided.

Keywords: transport control mechanism of patient information, checklist, health care safety and quality, management, medical facility

1. Introduction

Quality is a concept that has accompanied humanity since its beginnings, as evidenced by archaeological finds from China, Egypt and Iraq, as well as the first philosophical definitions from Plato and Aristotle [1]. Halis, Twati, & Halis Mu (2017) define quality as a perception based on a person's individual value system [2]. Aggarwal et al. (2019) emphasize that a revolution in the quality of service delivery, which puts the patient and their needs at the center of attention, is an inevitable requirement of the current time [3]. The quality management system of nursing care has become an integral part of modern nursing, while its main goal is to ensure a high level of services provided and patient safety. One of the most important factors in the implementation of this system is healthcare professionals, among whom nurses play a key role. Given the increasing demands on the quality of healthcare services, it is important to understand how nurses perceive the implementation of a quality management system. Since nurses make up a significant part of the healthcare workforce and their daily work directly affects the quality of nursing care, their opinion is a key indicator of the success of these systems focused on quality nursing care.

2. Check list

These forms are used to systematically collect data important for quality management and improvement. Emphasis should be placed in particular on their clarity, appropriate arrangement, clarity and sufficient space for recording individual data [1]. Checklists are used to ensure quality and safe healthcare, reduce failures caused by the human factor, and compensate for deficiencies in memory, attention, and communication. They serve as a control mechanism for all necessary transported patient information, verifying and ensuring adherence to clinical practice guidelines. They determine compliance with standards, help analyze the causes of problems, increase the safety of procedures, manage risk, and protect healthcare professionals from misconduct [4]. Compliance with laws, directives and decrees is an integral part of management at all levels, in every sector [5].

For example, to avoid confusion of patient identification – so that it does not happen that another patient will be operated, so that there is no confusion of the operating field – places: left, right upper, lower limb, left, right eye, left, right kidney, and so on. The checklist is an integral part of the nursing standard. It is essential

that members of the healthcare team are actively motivated to use them in their daily practice, ensuring a higher level of consistency. Nurses, in particular, should be systematically made aware of the importance of checklists. Adherence to these lists can be reinforced by regular audits, training and multidisciplinary education aimed at improving communication [6]. In today's healthcare, checklists play an important role in minimizing errors, standardizing procedures, and improving the quality of healthcare provided. These are systematically arranged lists of activities where healthcare professionals record the performance or non-performance of individual actions [7, 8].

The history of the use of checklists in the field of security dates back more than a century, when major organizations began to implement them as part of their security management [9]. Several medical disciplines have confirmed their contribution not only in the field of improving the quality of care and reducing mortality, but also in the field of team communication and coordination [7]. Given that patient safety and quality of care are key priorities in medicine, the implementation of checklists can bring significant benefits in the form of better outcomes, lower error rates, and more efficient use of resources [10]. Nevertheless, there are also more skeptical views on their effectiveness. For example, Simpson et al. (2007) were not able to unequivocally confirm the impact of checklists on the identification and elimination of errors or neglect of care in their research [11]. In the Slovak Republic, there is an internal system for assessing patient safety. It is regulated by a decree of the Ministry of Health. It is a set of rules aimed at increasing patient safety in the provision of health care. Hospitals are thus supposed to keep records of errors, errors or adverse events. The healthcare provider should also have a checklist in place to ensure the safety of the patient in the perioperative period. The template was developed by the World Health Organization (WHO). It should be completed before, during and after the operation, the aim is to check the actions that need to be performed. At the Ružinov Hospital in Bratislava, the wrong eye was operated on. The case, which was brought to the attention of TASR, is being investigated by the ÚDZS and the police of the Slovak Republic. The hospital confirmed that it had retrained the staff of the eye clinic in preoperative preparation after the incident. New knowledge has been incorporated into the so-called checklist [12].

3. Materials and Methods

Goal: Find out the attitudes of nurses to checklists depending on the workplace where nurses work.

Methodology

Quantitative research in the form of a questionnaire of our own design. The questionnaire was distributed from 09/2024 to 02/2025 online via the Facebook group – “Doctors, nurses and medical assistants”, and via email communication to students of the master's degree program in nursing at the University of Trnava

in Trnava. The respondents were nurses in the number of 103 nurses. The results of the research were analyzed using the Chi-square test and Cramer's V, which indicated the strength of the relationship between the monitored sources.

Research stages

The research was carried out in two phases. The first phase consisted of studying the available literary and electronic resources, on the basis of which we set research goals. The study of the theoretical basis of the thesis took place from March 2024 to June 2024. Based on the information obtained, we created a non-standardized questionnaire of our own design aimed at finding out the opinion of nurses on the quality management system. The questionnaire was anonymous and voluntary. In 7 items, we surveyed demographic data such as age, gender, number of years of experience, education, but also the type of medical facility, department/clinic in which they work, their job title and, last but not least, whether the medical facility in which they work is a holder of accreditation, certification, functional models of excellence or functional popular system quality tools. The research study took place from September 2024 to February 2025. The questionnaire was distributed via email communication to students of the first and second year of the master's degree in nursing at the University of Trnava in Trnava. It was also published on the social network in the private group "Doctors, Nurses and Medical Assistants".

Selection of respondents

The selection of respondents was intentional - nurses practicing their profession in health care facilities. This selection directly corresponded to the set goals of the thesis. 107 respondents participated in the research, while those who did not meet the selection criteria were excluded from the research. Based on this, 4 respondents were excluded from the research on the basis of non-compliance with the conditions for practicing the profession of nurse.

Statistical methods

We evaluated the data obtained using Microsoft Excel. We confirmed or refuted the established hypotheses using the statistical software Jamovi. We statistically evaluated the results of our research using the Chi-square test and Cramer's V, which indicates the strength of the relationship between the monitored variables. Whereas, if the value of $p < 0.05$, there is a statistically significant relationship between the monitored variables. The values of Cramer's V are interpreted as follows: 0 – 0.1: Weak or almost no relationship, 0.1 – 0.3: Weak relationship, 0.3 – 0.5: Moderately strong relationship, 0.5 and above: Strong relationship. The data obtained are presented in tables and graphs.

Characteristics of the respondent sample

Distribution of respondents by gender: The research group consisted of 103 (n=103) respondents. With the majority of women (97) accounting for 94.17% and men for (6) 5.83%.

Distribution of respondents by age: In terms of age, the two largest groups were nurses aged 26 – 35 years 37.86% (n=39) and nurses aged 36 – 45 years 30.10% (n=31). Almost the same number of nurses aged 46-55 was 13.59% (n=14), 56 and more years 11.65% (n=12). The smallest group consisted of nurses aged 18-25 years 6.80% (n=7).

Distribution of respondents according to the number of years of clinical practice worked: The largest group consisted of nurses working up to 5 years 24.27% (n=25), 6-10 years 24.27% (n=25). Almost a quarter were also nurses working for more than 21 years 21.36% (n=22). Nurses working for 16 – 20 years accounted for 15.53% (n=16) and the group of nurses with 11 – 15 years of experience accounted for 14.56% (n=15) of the respondents.

Distribution of respondents according to the highest level of education: The largest group of 44.66% (n=46) of respondents were nurses with 1st degree university education. The second most common education of 30.10% (n=31) was a university 2nd degree. This was followed by secondary education completed with a school-leaving certificate (until 2004) 12.62% (n=13) and tertiary professional education 11.65% (n=12). He had a university 3rd degree of 0.97% (n=1).

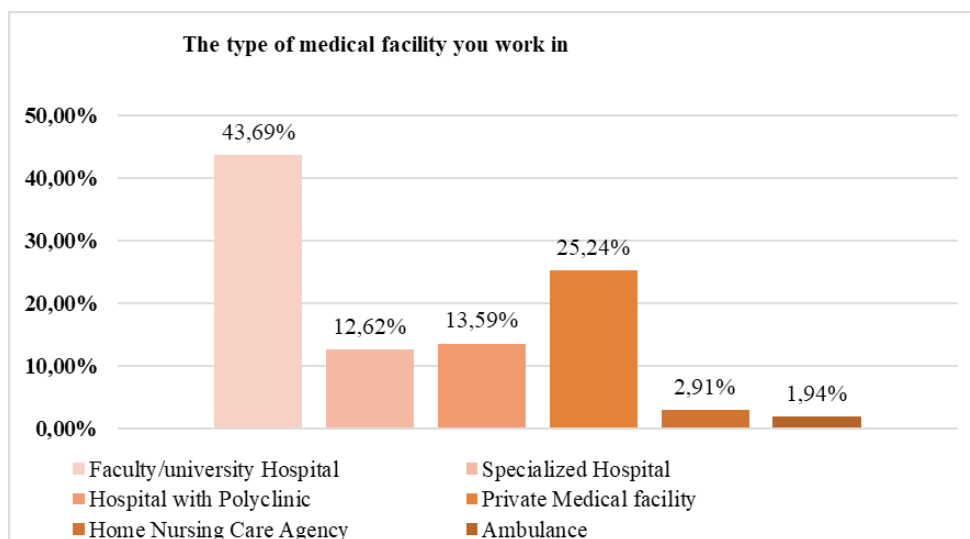


Figure 1. Type of healthcare facility you work in Distribution of respondents according to the type of medical facility in which you work

According to the type of medical facility in which they work (Graph 1), the largest group was made up of nurses working in the University/University Hospital (43.69% (n=45). Almost a quarter of the research group of 25.24% (n=26) consisted

of nurses working in private health care. Nurses working in a hospital with a polyclinic accounted for 13.59% (n=14) and in a specialized hospital 12.62% (n=13). The smallest group consisted of nurses working in ADOS 2.91% (n=3) and in outpatient clinics 1.94% (n=2).

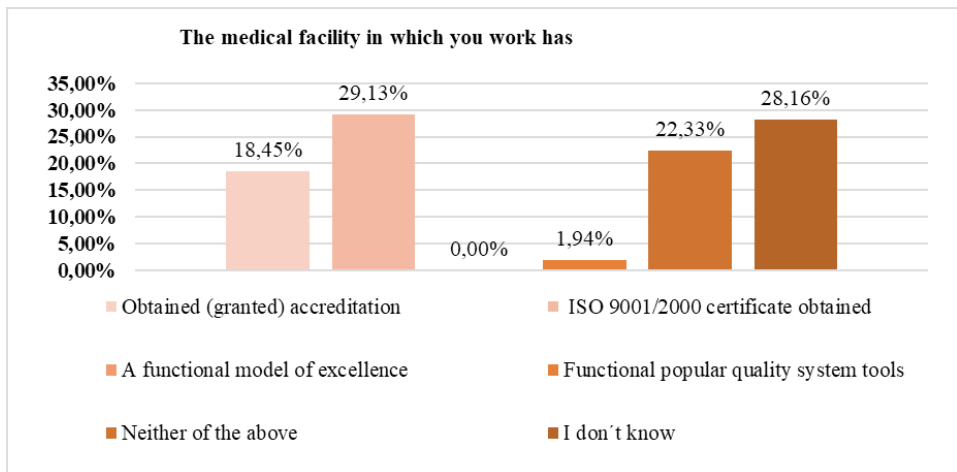


Figure 2. The medical facility in which you work has Distribution of respondents according to the accreditation granted, ISO 9001/2000 certificate obtained, functional model of excellence or other functional system quality tool

Table 1. Department/Clinic Distribution of respondents according to the department/clinic where respondents work

Department	N	%
Home Nursing Care Agency	3	2,9%
General practitioner's office/ambulance	2	1,94%
Dental ambulance	1	0,97%
Vascular surgery Clinic/Department	2	1,94%
Department of Central Operating Rooms	4	3,88%
Children's Clinic of Anesthesiology and Intensive Care Medicine	1	0,97%
Gynaecology Clinic/Department	1	0,97%
Surgery Clinic/Department	11	10,67%
Chirurgia Intensive Care Unit	1	0,97%
Infectious Clinic/Department	1	0,97%
Internal Medicine Department	6	5,82%

Department	N	%
Internal Medicine Department-Intensive Care Unit	1	0,97%
Clinic/Department of Anesthesiology and Intensive Care Medicine	21	20,38%
Cardiology Clinic/Department	4	3,88%
Neurology Clinic/Department	4	3,88%
Neonatology Clinic/Department	1	0,97%
Neonatology-Intensive Care Unit	1	0,97%
Paediatrics Clinic/Department	4	3,88%
Paediatrics – Intensive Care Unit	1	0,97%
Intensive Care Unit	3	2,9%
Cardiac surgery Clinic/Department	1	0,97%
Skin Clinic/Department	2	1,94%
I don't want to mention	1	0,97%
Neurosurgery Clinic/Department	4	3,88%
Ophthalmology Clinic/Department	2	1,97%
Oncology Clinic/Department	2	1,97%
Otorhinolaryngology Clinic/Department	3	2,9%
Orthopaedics Clinic/Department	2	1,97%
Pneumologist Clinic/Department	1	0,97%
Rehabilitation Clinic/Department	1	0,97%
Traumatology Clinic/Department	1	0,97%
Emergency Admission	8	7,76%

As part of the demographic data survey, we asked respondents whether the health care center in which they work has been granted accreditation, obtained ISO 9001/2000 certificate, a functional model of excellence or functional popular system quality tools (Chart 2). The obtained quality certificate according to ISO 9001/2000 stated that it has 29.13% (n=30). The answer “*I don't know*” was given by 28.16% (n=29) and “*none of the above*” was indicated by 22.33% (n=23) of the surveyed nurses. This was followed by the answers “obtained (granted) accreditation” 18.45% (n=19) and “functional popular system quality tools” 1.94% (n=2). In the given demographic item, we list the departments/clinics where respondents work.

Results: To verify hypothesis (H), we used a Chi-square independence test, which examined the relationship between nurses' attitude to audit and the type of healthcare facility. We have divided medical facilities into two groups. The first group consisted of private medical facilities (private medical facility, ADOS,

outpatient clinic). The second group consisted of state medical facilities (faculty/university hospital, specialized hospital, hospital with polyclinic). We verified H with five questionnaire items.

4. Results

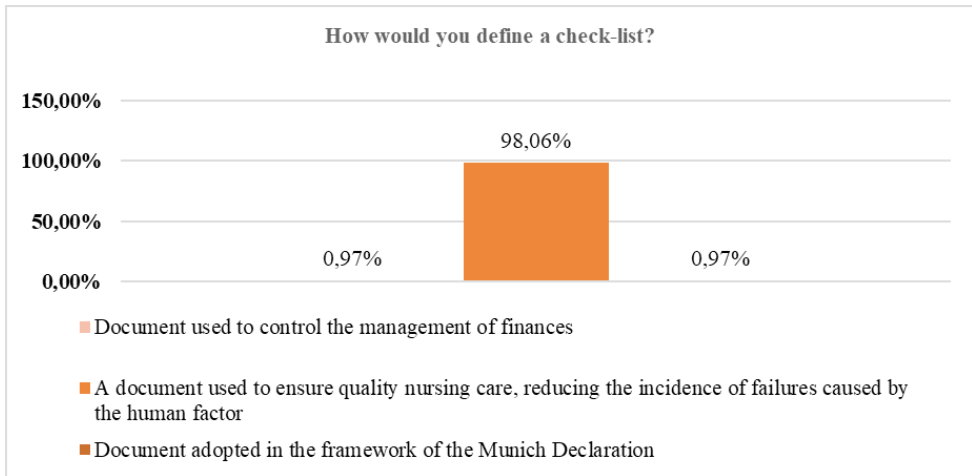


Figure 3. How would you define a check-list

In item 1 (Graph 3) “*How would you define a check-list*”, up to 98.06% (n=101) correctly marked “*A document used to ensure quality nursing care, reducing the incidence of failures caused by the human factor*”. The answer “*Document used to control the management of finances*” was marked by 0.97% (n=1) as well as the answer “*Document adopted within the framework of the Munich Declaration*” by 0.97% (n=1).

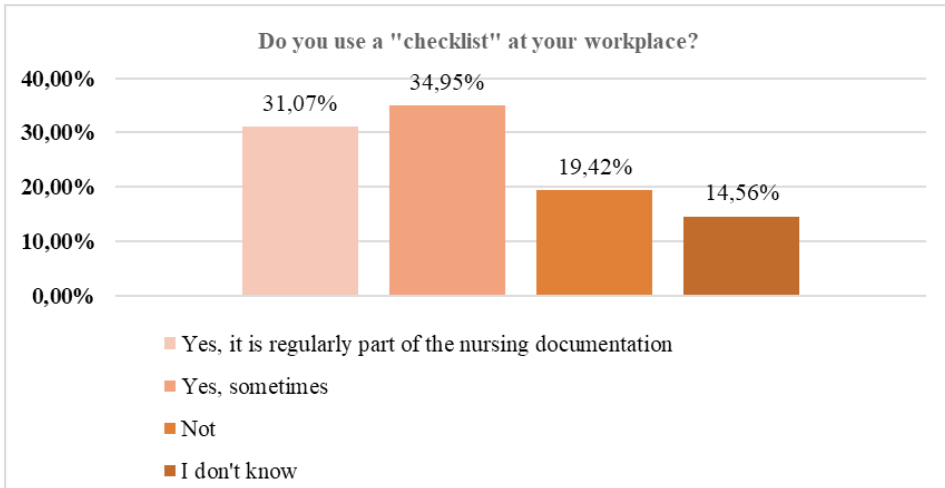


Figure 4. Do you use a “check list” at your workplace

Item 2 (Graph 4) was used to find out whether nurses use a check-list at their workplace. Almost a third, which represents 34.95% (n=36), of nurses chose the answer “*Yes, sometimes*”. This was followed by the answer “*Yes, it is regularly part of the nursing documentation*”, which was indicated by 31.07% (n=32) of the surveyed nurses. The answer “*No*” was chosen by 19.42% (n=20) of nurses. “*I don't know*” was indicated by 14.56% (n=15) of nurses.

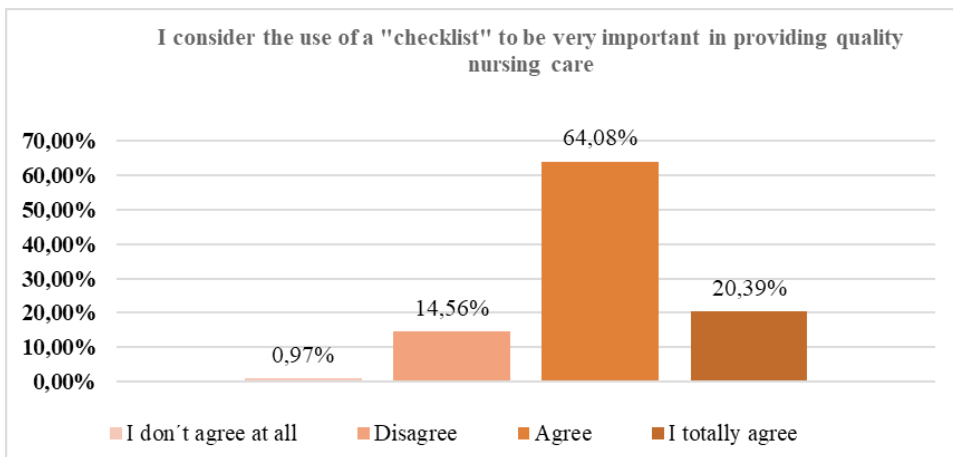


Figure 5. I consider the use of the “check list” to be very important in providing quality nursing care

For item 3 (Graph 5), we asked “*I consider the use of the “checklist” to be very important in the provision of quality nursing care*”. More than half, which represents 64.08% (n=66), indicated the answer “*I agree*”. The answer “*I completely agree*” was indicated by 20.39% (n=21) of nurses. The negative answer “*Disagree*” was indicated by 14.56% (n=15) of the respondents. The least common 0.97% (n=1) was the answer “*Disagree at all*”.

H0: There is no significant relationship between nurses’ attitude to the check-list and their workplace

HA: There is a significant relationship between the attitude of nurses to the check-list and their workplace.

To verify H, we used a Chi-square independence test, which examined the relationship between nurses’ attitude to the check-list and their workplace. Also in this case, we divided the research sample into two groups. The first group consisted of nurses working in surgical departments/clinics and intensive care units. The second group consisted of nurses working in standard nursing units. We verified H with questionnaire items 2,3.

Table 2. Do you use the “check list” at your workplace

Do you use a “check list” at your workplace	Department of Surgical Disciplines/ Intensive Care Unit		Standard Nursing Unit	Together
Yes, it is regularly part of the nursing documentation	N _p	25	7	32
	N _{pr}	24,27%	6,79%	31,06%
Yes, sometimes	N _p	22	14	36
	N _{pr}	21,35%	13,59%	34,95%
No	N _p	7	13	20
	N _{pr}	6,79%	12,62%	19,41%
I don’t know	N _p	10	5	15
	N _{pr}	9,70%	4,85%	14,56%
Together	N _p	64	39	103
	N _{pr}	62,13%	37,86%	100%
$\chi^2 = 9.88376$; df=3				
p= 0.0196; V= 0.30977				

NP – observed abundance, NPr – relative abundance, χ^2 – Chi-squared independence test, df – degree of freedom, p-level of significance, V – Cramer’s V as an indicator of material significance

In item 2 “*Do you use a “checklist” at your workplace*”, we focused on finding out the difference in the use of the check-list depending on the department and which nurse works. The results of the chi-square showed that there is a statistically

significant difference in the choice of answers $\chi^2 9.88376$ $df=3$, $p=0.0196$. Cramer’s $V= 0.3097$ for indicates a moderately strong relationship between the monitored variables, which means that the type of separation has some influence on the use of the check-list.

The value of $p = 0.0196$ indicates that this difference is not random, but that the check-list is used in different ways or with different frequencies in different departments.

Table 3. I consider the use of the “check list” to be very important when providing quality nursing care

I consider the use of a “checklist” to be very important in providing quality nursing care	Department/Clinic of Surgical Disciplines/ Intensive Care Unit		Standard Nursing Unit	Together
I don’t agree at all	N_p	1	0	1
	N_{Pr}	0,97%	0%	0,97%
Disagree	N_p	6	9	15
	N_{Pr}	5,82%	8,73%	14,56%
Agree	N_p	43	23	66
	N_{Pr}	41,74%	22,33%	64,07%
I totally agree	N_p	14	7	21
	N_{Pr}	13,59%	6,79%	20,38%
Together	N_p	64	39	103
	N_{Pr}	62,13%	37,86%	100%
$\chi^2=4.17175$; $df=3$				
$p= 0.2435$; $V= 0.20125$				

N_P – observed abundance, N_{Pr} – relative abundance, χ^2 – Chi-squared independence test, df – degree of freedom, p -level of significance, V – Cramer’s V as an indicator of material significance

In item 3 “*I consider the use of the “checklist” to be very important in the provision of quality nursing care*”, we investigated whether there is a statistically significant difference in the choice of answers between the perception of the importance of using the check-list and the nurse’s workplace. The results of the chi-square showed that there was no statistically significant difference in the choice of answers $\chi^2 4.17175$, $df=3$, $p=0.2435$. Cramer’s $V=0.20123$, which indicates a weak relationship between the monitored variables, which means that most nurses in different departments consider the check-list to be about the same important.

The value of $p = 0.2435$ means that the differences in the perception of the importance of the check-list between nurses in different departments are negligible and may be due to chance. Based on the fact that one hypothesis is confirmed and the other is not, we do not have enough evidence to accept an alternative hypothesis. And so we accept H_0 , i.e. *“There is no significant relationship between the attitude of nurses to the check-list and their workplace”* and reject H_a .

5. Discussion

Our research findings on the use of check-lists in healthcare practice provide an interesting insight into their implementation and the perception of their importance by healthcare professionals. We found that a total of 66.02% of nurses (34.95% sometimes and 31.07% regularly) use check-lists in their work, which indicates a relatively high rate of adoption of this tool in clinical practice. It is encouraging that as many as 84.47% of respondents (64.08% agree and 20.39% completely agree) consider the use of check-lists to be important in providing quality nursing care. This positive perception corresponds to the conclusions of Limauro et al. (2020), which affirm that the correct and regular use of checklists can significantly improve team communication, collaboration, and patient safety [6]. Our findings also support the conclusions of Weheidu (2015) on the positive impact of the check-list on interactions in the nursing team [13]. Significantly, more than two-thirds of our respondents actively use check-lists, which creates a prerequisite for improved teamwork and communication, which Weheida identified as a key benefit of this tool. Research by Tscholla et al. (2015) highlights the importance of check-lists for improving communication in medical-nursing teams, improving processes, and increasing awareness of important patient information [14]. In this context, it is worrying that 19.42% of respondents in our research do not use check-lists at all and 14.56% do not know about their use in the workplace. This group represents about a third of respondents, which may indicate room for improvement in the implementation of this important tool.

The results of our research show that a significant majority of nurses, namely 84.47% ($n=87$), consider the use of checklists to be important in providing quality nursing care. Of this number, 64.08% ($n=66$) of respondents indicated the answer “I agree” and 20.39% ($n=21$) chose the answer “I completely agree”. Only a minority of respondents expressed disagreement, with 14.56% ($n=15$) indicating the answer “disagree” and only 0.97% ($n=1$) of respondents indicating “disagree at all”. These results can be compared with a study by Levy et al. (2012) that focused on adherence to the WHO safety checklist in the context of pediatric surgery. Although our study examined the perception of the importance of checklists and Levy et al. (2012) examined the degree of adherence to them, both researches suggest a significant discrepancy between the theoretical valuation of checklists and their practical implementation [15]. While our respondents overwhelmingly declared support

for the use of checklists, Levy et al. (2012) found that despite 100% application of safety procedures, none of them were executed perfectly. The highly positive perception of the importance of checklists in our research can also be interpreted in the context of a study by Haynes et al. (2009), which demonstrated that the introduction of the WHO surgical checklist safety system into clinical practice is an effective measure that has a significant impact on reducing the incidence of complications [16]. The nurses in our research likely perceive this benefit, which explains their strong support for the use of checklists. However, it should be noted that the expression of support for the use of checklists in a questionnaire study does not necessarily reflect the actual degree of their implementation in everyday practice. As indicated by a study by Levy et al. (2012), even though checklists have been formally established, a number of safety procedures have not been implemented at all or have been implemented unsatisfactorily [15]. The Press Agency of the Slovak Republic quotes the opinions of doctors, supported by experience and verified on the EBM principle: “Safety measures in health care are sufficiently defined in the law, but their implementation fails.” This requires training and constant pressure from superior authorities. The importance of training and regular training of employees in the management process is also pointed out by the team of authors Rayevnyeva et al (2023) [17]. Based on our findings, we also propose to unify the use of check-lists, as 84.47% of respondents consider their use to be important in the provision of quality nursing care, but only 31.07% use them regularly. The implementation of regular workshops focused on working with standards and check-lists can help with this. It is important to explain to nurses all the positives of using check-lists. Therefore, we recommend retraining all nurses – both with many years of experience and with emerging practice, providing nursing care and teaching new nurses to use check-lists effectively. A checklist, a control protocol for a secure operation, is often seen as a bureaucratic burden. This was pointed out by a doctor dealing with health safety Vladimír Černák, who works abroad. “It is legally treated, but it is taken as a burden. Maybe it’s annoying, but it makes sense,” he told TASR. He pointed out that compliance with checklists is standard abroad, operating procedures and protocols of hospitals are subject to audit. According to him, this could be carried out in Slovakia by the Health Care Surveillance Authority (ÚDZS) in cooperation with professional societies [18]. The issue of citizen safety is also highlighted by Semerád (2024), who highlighted the importance of prevention by making standard records of problematic events in order to evaluate, describe, identify the causes of their occurrence and subsequently eliminate them [19]. “However, it seems that the office will start responding only after it receives a complaint,” he said. According to him, this must change, the problem is mainly a strong hierarchical system. “This is a process of deheroization of healthcare. In a strongly hierarchical system, it is more difficult to enforce changes that require teamwork. You have to convince the “heroes” to implement changes that strengthen

this cooperation. However, they are usually not interested, as this would lead to a reduction in their status,” he pointed out [12]. Nurses are expected to be creative in the process of using checklists with the search for reserves and the possibilities of their completion so that they correspond to the tasks for which the checklists were created [20]. The issue of creating and using checklists should be resolved in cases of accredited health care facilities [21].

Conclusion

Quality healthcare should be the basic goal of every health service provider. In today’s dynamic environment, it is essential for healthcare facilities to respond flexibly to changing patient needs and expectations. Achieving this goal requires the implementation of a comprehensive management system that ensures the smooth operation of the healthcare facility. In the future, we propose that the principle that each checklist must be open, ready for the implementation of new, necessary data, established on the basis of everyday clinical practice, which should be incorporated as soon as possible into the content of the specific checklist (to which the change relates) so that the checklist fulfils the task for which it was created - to increase the safety and quality of health and nursing care.

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