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TECHNICAL SKILLS OVERWHELMING SOCIAL SKILLS OF OCCUPATIONAL HEALTH NURSING ON TEACHING METHODS

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Abstract

The teaching of occupational health nursing (OHN) requires an emphasis on which one should be dominant between technical and social domain, as practiced in the industrial health care services. The purpose of this research is determine which skill domain is more dominant between technical and social skills in the OHN teaching-learning system. This type of study is quantitative approach with cross-sectional study design. The populations were nursing students, nursing practitioners, and nursing lecturers. The sampling technique is non-probability sampling taken online with a sample size of 130 respondents of Indonesian nurses in Indonesia. The data collection tool used a mixed questionnaire in a Likert Scale based on the Health Belief Model theory. The data were analyzed using the Paired Sample T-Test to see whether the results of this study were dominated by the technical or social skills domain. The validity and reliability test was carried out with a sample of 30 people. They were measured by looking at the r table and the Cronbach alpha value for each questionnaire statement, using the SPSS application with the Pearson Product Moment test. The T-Test result of SPSS shows 95 respondents (73.1%), perceived technical skills dominate the OHN work in industry, and 35 respondents (26.9%) in social skills, with a p-value of 0.000. In other words, the dominance of technical skills has a very close association to the teaching-learning system. The need for technical skills is much more dominant than social skills. OHN teaching needs to have an emphasis on technical skills, not the social domain.

Keywords: *Nursing; Occupational health; Skills; Teaching*

1. Introduction

The development of nursing in different settings today is marked by the expanding number of professional specialized education (WHO, 2015). Specialist education in the industry for example requires creativity and innovation in its teaching technology. Creativity and innovation do not only bring new air to the learning system but also make the teaching and learning process more interesting (I. J. Tukayo, 2020). Innovation in nursing keeps an organization competitive and adaptive to change (Yılmaz, 2015). Nurses look for new ways to innovate and transform (The International Council of Nurses, 2018). Era Covid-19 is an example in which nurses are challenged for quality, design new care delivery models, and create workplaces that empower them to new ideas that lead to innovation (Allobaney et al., 2020). For that purpose, nurses can learn to be creative and use education to empower them to use creative thinking techniques to solve problems in practice (Francine, 2019). On the one hand creativity and innovation play important roles in nurses' productivity (Jokari et al., 2012). The OHN teaching-learning system on the other hand, still uses the old conventional paradigm (Hardy, 2012). This needs to be upgraded by using a new paradigm that is more creative and innovative. For example which one is to be more emphasized between the teaching of technical

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and social subjects in occupational health nursing.

Technical skills are those that include knowledge of methods, processes, procedures, and techniques for carrying out a special activity and the ability to use relevant tools for these activities (Gillespie et al., 2017). A similar opinion was expressed by Seo (Seo & Cho, 2021), that technical skills are the human ability to use procedures, techniques, and knowledge about a special field. Nurses in general practice are required to master the knowledge, methods, processes, procedures, and techniques on how to carry out certain nursing procedures (Abdul Rahman et al., 2015). Nursing students who have adequate skills during their studies are expected to be able to use the special skills needed in practice according to the indicators (Kirwa. Lilian Gakere, 2016). In the practice of OHN, nurses can take advantage of technological equipment, carry out work procedures and be able to handle health problems according to their physical needs by using tools/devices in the workplace (Lalloo et al., 2016). Social skills are related to a person's ability to observe social behavior (Adrianto, 2011). People who have social skills can give a better impression and can improve their appearance and can create positive feelings in themselves compared to people who do not have this ability (Aliakbari et al., 2015). Jahja stated that social skills are the ability to interact effectively with people and provide individual support at all levels (Jahja et al., 2016).

From those two opinions, it can be concluded that nurses in their work need both, technical and social skills as a provision to communicate with clients or patients at work. Therefore, nursing students during their studies need provision related to social skills as well as technical skills, to sharpen their communication and also technical skills. In the field of OHN, nurses have to know which skills are more required and emphasized. This is due to technological development and the adoption of new technology in health care services that have greatly affected the work of nurses (Huston, 2016). Increased use of technology has created a constant demand for nurses to develop new skills and competencies (Ruotsi et al., 2019). The gap between technical and social skills needs to be specified in OHN practices, as the new scope of nursing practice includes technical and social knowledge and skills (Association of Registered Nurses of Newfoundland and Labrador, 2006). In Indonesia OHN is not yet taught as a specialization branch of nursing (Tukayo et al. 2021). They identified technical aspects to be more dominant in teaching OHN based on the basic pillar of OHN teaching material i.e. Fitness to Work, Health Promotion, Health Surveillance, and Case Management. This type of skill affects the teaching system. Therefore Behavior theory is very appropriate. This theory is used because of the factors that influence perception before producing an action (Abraham & Sheeran, 2014).

To clarify this, research on this issue is significant. This study tried to explore which aspect of OHN activities are more dominant between technical or social skills, to determine which skill domain is more dominant as a recommended material for the education of OHN. At the same time, it can be used to help students and nursing professionals (practitioners, educators, researchers) improve the teaching-learning process from the perspective of OHN.

2. Method

The methods used in this study are Quantitative with a cross-sectional design. The sampling technique was purposive sampling (Non-probability sampling). It gives the best chance to create a sample that is truly representative of the population (Showkat & Parveen, 2017). The reason for using purposive sampling was because not all samples have criteria according to what the author has determined. Therefore, the selected sample was deliberately determined based on certain criteria that have been determined by the author to get a representative sample. Inclusion criteria were Indonesian nurses and nursing students, aged 17-60 years who are working or studying, physically and mentally healthy, willing to become informants, understand, or have attended OHN training. Exclusion criteria were those physically and mentally unwell. The theory used in this study is the Health Belief Model (HBM). The model seeks to explain and predict changes in individual attitudes towards health (Abraham & Sheeran, 2014).

Figure 1 shows that modifying factors affect the individual perceptions, as do cues to actions. The combination of belief and cues to action leads to individual behavior. It is one of the most widely used models for understanding health behaviors (Abraham & Sheeran, 2014). To illustrate the model to into practice the study the authors used three different components in the questionnaires to adjust with the theory.

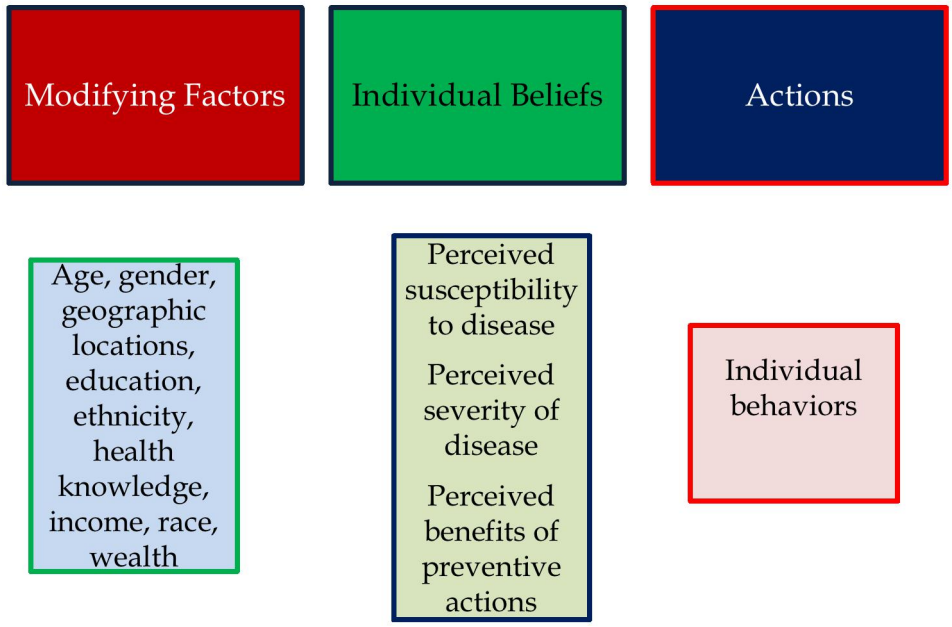

***Figure* 1.** *Health Belief Model*

The first component is about demography, education, and the workplace. The second component is about the perception of the training and technical knowledge used in the workplace. The third one is about the result in the individual behavior which projected the skill domination in the workplace. The validity and reliability test was carried out by taking a sample of 30 people and then testing the validity and reliability. The authors looked at the r table and the Cronbach alpha value for each questionnaire statement using the SPSS application with the Pearson Product Moment test. The study compared two domains (technical and social skills) and looked at data from a population at one specific point in time. The population was Indonesian students in full-time study assignments and Indonesian nurses working in hospitals, health centers, industry, and lecturers, voluntarily participated from 30 April to 4 May 2020. A total sample size of 130 respondents, conducted online, consisting of 19 students studying assignments (14.6%), practitioners 57 (43.8%), lecturers 5 3.8%), entrepreneurs 17 (13.2%) and 32 people who are currently doing an internship (24.6%). The data collection tool used a questionnaire of the Likert Scale. The process included editing, coding, transferring, and tabulating steps. The research was conducted after obtaining a letter passing the ethics test from the Jayapura Poltekkes Ethics Committee, which aims to protect and guarantee the confidentiality of respondents. Authors received the Letter of Approval from the Ethics Committee No.: 005/KEPK-J/IV/2020.

3. Result and Discussion

There are five independent variables discussed in the results of this study. Those variables are discussed because they have an association or are the cause of changes in the dependent variable, namely the practice of OHN in the workplace. The main five variables include the level of education, the comparison between education and the workplace, the comparison of nurses who have received OHN courses and those who have not, where they received OHN material and why OHN is not widely known in Indonesia. The educational background needs to be identified because formal education affects the quality of workers (Ye, 2021). A comparison of education and workplace was analyzed to find out which level of education dominates so far. The level of education affects the quality of work (Martínez-Buelvas et al., 2021). Those who have gained knowledge about OHN were also recorded because knowledge about OHN have a big influence on the results of their perceptions and work (Özer et al., 2017). The place of gaining the OHN knowledge and skills affects the quality and quantity of knowledge and skills acquired, due to differences in work productivity between formal and informal education (Fuller et al., 2003). Likewise, the variables related to why OHN is not well known in Indonesia need to be socialized because in the future they will affect the level of employment demand and the existing workforce as well as planning for OHN teaching in nursing colleges. The authors used Health Belief Model Theory to test those variable because the theory is

useful for explaining and predicting individual changes in health behaviors. It is one of the most widely used models for understanding health behaviors (Abraham & Sheeran, 2014).

Table 1. Demographic Data

Demographic Data	F	%
Age (years)		
17-25 years (late teens)	33	25.4
26-35 years (early adults)	66	50.8
36-45 years (late adults)	18	13.8
46-55 years (early elderly)	8	6.2
> 55 years (late elderly)	5	3.8
Gender		
Male	89	68.5
Female	41	31.5
Status		
Study Assignment Student	19	14.6
Practicing Nurse	57	43.8
Lecturer	5	3.8
Entrepreneur	17	13.1
Internship program	32	24.6
Islands		
Sumatera	46	35.8
Jawa	51	39.2
Kalimantan	8	6.1
Sulawesi	10	7.7
Maluku, Nusa Tenggara and Papua	15	11.5
Total	130	100

Based on the table 1, the highest gender distribution willing to become respondents is male as many as 89 people (68.5%). The highest age distribution is between 25-35 years old (66 people or 50.8%). The majority of nurses worked as practicing nurses (57 people or 43.8%), and the majority of respondents came from Jawa island (51 people or 39.2%).

Table 2. Comparison of Education and Workplace (n = 130)

Workplace	Education					Σ	%
	D3	D4	S1	S2	S3		
Hospital	19	2	25	3	1	50	38.5
Clinic	5	0	6	0	0	11	8.4
Public health center	7	1	15	1	0	24	18.5
Industry	5	1	17	1	0	24	18.5
Entrepreneurs	13	0	3	0	0	16	12.3
Campus	0	1	0	2	2	5	3.8
Total	49	4	66	7	3	130	100

The table 2 shows that the majority of respondents work in hospitals (50 nurses= 38.5%), majority of them were undergraduate nursing, 24 people worked in the industry (18.5%). Of the 24 nurses, the majority took undergraduate education (17 nurses= 70.8%). The table 3 shows those who received OHN subject material was 43 nurses (33.1%). Of the 43 nurses, 18 nurses worked in hospitals (41.8%) and 14 nurses in the industry (32.5%). The place of receiving OHN subject material from the mass media were 63 people (48.5%), while those from work were 27 nurses (20.8%).

Table 3. Comparison between those who get the OHN Lecture and those who don't (n = 130)

The place Work	OHN lecture		Σ	%
	Ever	Never		
Hospital	18	32	50	38.5
Clinic	4	7	11	8.4
Public health center	5	19	24	18.5
Industry	14	10	24	18.5
Entrepreneurs	0	16	16	12.3
Campus	2	3	5	3.8
Total	43	87	130	100

The diagram 1 shows the reasons for the lack of information related to OHN in Indonesia, due to the lack of socialization was 42 respondents (32.3%) and 28 nurses were not taught on campus (21.5%). Regarding the comparison of occupational health knowledge between nurses who have attended OHN courses and those who have not, the respondents show that nurses strongly agreed with the difference in insight between those who have attended OHN training and those who have not. The majority of Indonesian nurses who agreed to those differences were 68 nurses (52.3%).

Figure 2. *Why OHN is not widely known in Indonesia (n = 130)*

They also show that industrial nurses who have received OHN training/courses helped clarify their role as nurses in the industry. The statement was supported by the majority of respondents who strongly agreed (66 people or 50.7%) and 60 respondents agreed (46.1%). Technically, OHN nurses know how to improve the quality of health status and prevent disease in the workplace, 55 nurses (42.3%) strongly agreed and 67 nurses (51.5%) agreed that the gaining of knowledge and skills through OHN lectures/training would help increase work productivity. Concerning the technical competence between nurses who have attended OHN training and those who have not, 31 people (23.8%) strongly agreed that OHN nurses are not the same as general nurses or paramedics and 37 people (28.4%). Seventy respondents (53.8%) agreed that OHN nurses know the suitability between workers and work from health perspective and 48 respondents (36.9%) who strongly agreed. They (55 respondents or 42.3%) strongly agreed that OHN nurses require specialized education, and 49 people (37.6%) who agreed.

Table 4. Correlation between Technical Skill and Teaching Method

Variable	$(\bar{x})$	SD	p-value	r
Technical Skill	46.03	3.722	0.000	0.994
Teaching	30.72	3.242		

Table 4 shows that from the results of Pearson' Product Moment test, obtained p-value 0.000 which means p-value <0.05. It means that H0 is rejected. In other words there is significant association between technical skill and teaching skill. The value of Pearson correlation coefficient

(r) is positive 0.994. It shows the correlation between technical skill and teaching skill is in the category of "Very High/Very Strong", while a positive value indicates the pattern of influence is one -way.

Table 5. The Correlation between Social Skill and Teaching Method

Variable	($\bar{x}$)	SD	p-value	r
Social Skill	42.22	3.601	0.014	0.639
Teaching	30.72	3.242		

Table 5 shows that from the results of Pearson' Product Moment test, obtained p-value 0.014 which means p-value <0.05. It means H0 is rejected. In other words there is significant association between social skills and teaching. The value of Pearson correlation coefficient (r) is positive 0.639, which shows the correlation between social skills and teaching is in the category of "High or Strong", while a positive value indicates the pattern of influence is one -way. The conclusion is that the association between technical skill and its teaching method is greater/stronger teaching than the association between social skill and its teaching, because it has a Pearson (r) correlation coefficient value of 0.994.

The findings of WHO (2012) show eight roles of OHN nurses as the basis for recommendations for the types of nursing services in the industry. The roles include clinician, specialist, manager, coordinator, adviser, health educator, counselor, and researcher. The eight roles, cover both technical and social skills as OHN service available to clinicians, and specialists. Nursing managers, coordinators, advisors, health educators, and counselors besides managerial, are also required to have technical skills (Ofei et al., 2020). More concretely, the recommendations from UKOOA (United Kingdom Offshore Operators Association) and OSHA (Occupational Safety and Health Administration, 2016) clearly state the role of Occupational Health professionals. Their recommendations include Fitness to Work (FTW), Health Promotion, Health Surveillance, and Management of Ill Health (Case Management). In its realization, these four pillars require technical skills because they use tools or instruments be it medicine, nursing, and other laboratories (Tukayo & Hardy, 2020). Those four pillars are concrete evidence of technical skills in OH of nursing services. The WHO's findings and OSHA standards can be used as recommendations in the practice of teaching OHN on campuses.

Unfortunately, currently there is no OHN specialist education in Indonesia (Hardy et al., 2021). This study provides evidence that the basic knowledge related to OHN is taught on campus under Community Health Nursing subject, while practical skills are provided through occupational health and safety trainings (Tukayo et al., 2021). Even then, the credit is still very limited, because it is only given for three or four days (Putri et al., 2018). However, that provision is still better because it offers significant contribution to the practice of nurses in the industrial settings.

Work productivity of OHN nurses refers to SMART (Specific, Measurable, Achievable, Relevant, Timebound)

In FTW, there are at least 10 types of medical check-ups (MCU), which involve nurses in their services. service order. Preparation for MCU procedures, requires administrative preparation, patient preparation, equipment, and nurse preparation (Tukayo & Hardy, 2020). The general stages in the MCU include assessment, general physical examination, and special physical examination. General physical examinations include observation, palpation, auscultation, and vital signs (Tukayo & Hardy, 2020). The procedures of spirometry, audiometry, VO2Max and ECG are technical. They are performed by OHN nurses in the workplace. This SMART principle when practiced in FTW is very precise. FTW in implementing its work includes specific targets (Specific), the work objectives can be measured in the form of employee fitness status (Measurable), can be reached because all employees are in one organization (Achievable), relevant because according to the needs of the occupational health sector, and there is always a counter-time (Time bound). FTW is always carried out for industrial workers with clear time contracts according to the level of risk (ILO, 2010). Low risk (once every 5 years), medium risk (3-5 years), and high risk every year) in the MCU (Tukayo & Hardy, 2020). The productivity is proven through performance by the use of

technical skills. FTW is an example of OHN procedures that require the OHN technical skills that dominate OHN activities in industrial nursing. The technical teaching of OHN helps enhance nurses' competencies in the workplace.

The role of nurses technically in the industry focuses more on the health needs of the industry

According to Tukayo & Hardy (2020) in their book Occupational Health Nursing Management, it is stated that there are nine special types of OHN programs, namely: Ergonomic Assessment in industry, Health Promotion, Health Surveillance, Case Management, Hearing Conservation Program, Smoking Cessation Program, Respiratory Protection Program and Medical Waste Disposal. These programs require special technical skills in which the minimum technical skills include operating computer such as Word and Excel in Windows applications. Other technical services involve identifying workplace hazards, conducting medical evaluations, treating injuries, assisting employees with a return to work issues (Rasmor & Brown, 2001). Besides, educating employees about wellness programs and making referrals to employee assistance programs and other community agencies (Tukayo and Hardy, 2020).

This technical assessment process is meant to maintain a healthy workforce. Nurses require the delivery of OHN material through structured lectures or training is very helpful in clarifying the role of nurses in the industry (Bagley, 2002; Rogers, 2009). Technical procedures need practical experience during the learning process (Katajavuori et al., 2006). OHN practice in the workplace requires nurses to be technically skilled in implementing health needs-related procedures.

Technically, OHN nurses are required to know how to improve the quality of health status and prevent disease in the workplace

One of the main activities in the Core OHN Activities category according to the Association of American Occupational Health Nursing (AAOHN, 2004; Bagley in Oakley, 2002) is Health Promotion. Health promotion is needed in the workplace to help workers change their lifestyles to move towards optimal health conditions (Tukayo & Hardy, 2020). Activities may include but are not limited to awareness programs such as socialization, which are usually low-cost and easy to implement. For example, on World Kidney Day, the event can be socialized in an electronic flyer to all employees via email. The message is in the form of efforts to maintain kidney health, for example drinking lots of water, reducing foods that use coloring agents, not holding back urination, etc. This kind of activity needs to be evaluated through behavioral change (change of attitude). It can be done by distributing questionnaires. Yet, it needs environmental support, including workplace management.

Therefore, the roles of the OHN nurses are technically large. OH nurses are required to have technical skills not only understanding how to maintain kidney health administratively but also being able to describe health education services, counseling, researching, and other technical skills related to the use of computing. Tukayo and Hardy (2020) mention four main pillars that must be mastered by OHN nurses technically including Fitness to Work, Health Promotion, Health Surveillance, and Case Management which support work productivity. These pillars are the focus of their work by following OSHA recommendations (2011). The majority of respondents in this study strongly agreed (55 people or 42.3%) that technically OHN nurses need to know how to improve the quality of health status and prevent disease in the workplace, in this case through the Health Promotion program.

OHN nurses are technically competent as specialist nurses

The eight roles of OHN nurses according to WHO (2012) need to be given in a structured and programmed manner through formal education. Through formal education, learning objectives will be more focused and have credit points (Suwaileh & Gwele, 2005). Thus the results of competency can be measured academically. This is what distinguishes the competencies of those who have attended OHN training/lectures and those who have not. Rogers et al. (2009) analyzed more than 100 commonly encountered cases and how to handle them in the industry in their book Occupational Health Nursing Guidelines. Those guidelines serve as evidence of the importance of technical skills in nursing services in the workplace. Through education, the quality of nursing staff can be produced (Lestari, 2014).

The competency gained through this education is what makes OHN nurses treated as specialist nurses. The reason is that OHN nurses are not general or paramedic nurses, which is

supported by the majority of respondents, namely 31 nurses who strongly agreed (23.8%) and 37 nurses who agreed (28.4%). Meanwhile, 26 nurses were hesitant (20%). The majority of respondents also admitted that OHN nurses needed specialization education, namely 55 nurses (40.3%) who strongly agreed and 49 nurses who agreed (37.6%). This is evidence that OH nurses are technically competent based on both the length of formal education and the number of credits gained. The competency of OH Nurses should be supported by the availability of technical domains in their teaching-learning process.

4. Conclusion and Suggestion

This study attempted to explore the dominance of technical skills over social skills in OH services activities from an OHN perspective in the workplace. The result shows that technical skills are more dominant than social skills. The significant difference indicates the need for nursing education renovation in terms of teaching OHN materials. The study also suggests emphasizing more on technical rather than a social domain. The advantage of the research is that it was completed within a short time because it was online, economical, and practical. Yet, the limitations are the number of respondents does not represent all Indonesian nurses across the archipelago and those working abroad. Only 18% of the respondents working in industrial settings that are not sufficient participated in the research is considerably less. However, the study suggests more detailed technical teaching of OHN is needed to support the technical way of OHN subject delivery within formal study or in semi-formal trainings, and the identification of OHN technical procedures are highly recommended for further research.

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