AUTHOR	Johanna Sirkka, Riitta Suhonen, Jouko Katajisto, Leena Salminen, Minna Stolt
TITLE	Self-reported competence level of occupational health care professionals in work ability risk management and analysis
YEAR	2023
VERSION	Final Draft
JOURNAL	Work: a journal of prevention assessment and rehabilitation
CITATION	Sirkka, Johanna et al. 'Self-reported Competence Level of Occupational Health Care Professionals in Work Ability Risk Management and Analysis'. 1 Jan. 2023 : 1071 – 1081.
DOI	10.3233/WOR-220229

SELF-REPORTED COMPETENCE LEVEL OF OCCUPATIONAL HEALTH CARE PROFESSIONALS IN WORK ABILITY RISK MANAGEMENT AND ANALYSIS

Johanna Sirkka [a]*, Riitta Suhonen [a, b, c], Jouko Katajisto [d] 5, Leena Salminen [a, c], and Minna Stolt [a, e]

[a]Department of Nursing Science, University of Turku, Turku 20014, Finland

[b]Welfare Services Division, City of Turku

[c]Turku University Hospital, Finland

[d] Department of Mathematics and Statistics, University of Turku, Finland

[e]Department of Nursing Science, University of Eastern Finland

*Corresponding Author: Johanna Sirkka, Department of Nursing Science, University of Turku, Medisiina B, 20014 UniversityKansof Turku, Finland. Tel: +35 8445698395; e-mail: johanna.m.sirkka@utu.fi

SELF-REPORTED COMPETENCE LEVEL OF OCCUPATIONAL HEALTH CARE PROFESSIONALS IN WORK ABILITY RISK MANAGEMENT AND ANALYSIS

BACKGROUND: The management and analysis of work ability risks is important to support well-being at work and requires multidimensional competence. Competence evaluation in Occupational Health Care professionals' (OHCP) practice is essential for their professional development and promotion of quality of care.

OBJECTIVE: To describe OHCPs' self-reported competence level to manage and analyze work ability risks.

METHODS: A descriptive, cross-sectional study design was applied. The data were collected electronically from May to June 2018 using the Comp-WARMA instrument (scale 1 = poor – 4 = excellent) from Occupational Health Care professionals working in Finnish private medical centers (n=169, response rate of 10%). The data were analyzed statistically.

RESULTS: The levels of knowledge and skills of OHCP in work ability risk management and analysis were mainly at good level (3.22 on average), but some deficient were still identified. The knowledge and skills of the work ability risk management and analysis were associated with the number of customer organizations they worked with, their attendance of supplementary training regarding work ability risk management and analysis, their amount of work experience, their type of employment, age, and gender.

CONCLUSIONS: OHCP self-reported competence levels in work ability risk management and analysis was at good level. There is a need for development in all areas of work ability risk management and analysis. OHCP could benefit from in-service education on work ability risk

management and analysis. Further validation of the Comp-WARMA instrument in larger sample is needed.

Keywords: occupational health services, professional competence, survey

1. Introduction

Competence in work ability risk management and analysis is important in promoting the health of the working-age population and preventing disability. Work ability promotion is an important socio-political objective because work disability is a significant cause of expense to society as well as loss of earnings and human suffering for individuals [1, 2, 3]. Work ability risk management and analysis requires the multidimensional competency of Occupational Health Care professionals (OHCP). Competence evaluation in OHCP practice is essential for developing and promoting the quality of care.

Work ability risk management and analysis is a relatively new and evolving concept in Occupational Health Care and can be described as a cross-cutting continuous process that brings together the key functions of work ability management (promotion), early response (primary prevention), sickness absence management with sick leave follow-up (secondary prevention) and return-to-work support (tertiary prevention), implemented by occupational health services [comp. 4, 5, 6]. Professional competence means the ability to perform the tasks assigned to an organization in accordance with certain criteria [7]. The key areas of professional competence can be divided into the knowledge base, skills base, attitude base, and experience base. Skills are closely linked to practical performance [8]. This study focuses on the knowledge base and skills base of competence.

Research on OHCP competence in managing and analyzing work ability risks is limited and the previous literature offers no clear definition of what such competence constitutes. In studies, definitions bypass the management and analysis of work-related risks and only partially define the topic. However, some studies on occupational health professionals' understanding, knowledge, or perceptions of the concept of work ability can be found. For example, Coomer & Houdmont [9] compared knowledge, understanding, and use of the work ability concept

among occupational health nurses and physicians in the UK and Finland and identified factors that influence the use of work ability in Finnish Occupational Health Care practice. That study identified large between-country differences in the assessment of work ability in Occupational Health Care practice, and indicated that the differences may reflect contrasting Occupational Health Care legislative frameworks [9]. Another study assessed the perceptions of occupational safety and health professionals of the concept of work ability in Norway and showed that there were significant comprehension disparities in the understanding of the concept [10]. Previous studies seemed to focus on work ability assessment and promotion on a general level. However, studies investigating OHCPs' competence to manage and analyze work ability risks seem to be lacking.

As Occupational Health Care aims to promote work ability and prevent work-related health problems, competence in managing and analyzing work ability risk is essential. By having competence to manage and analyze work ability risks it is possible to detect workers' work ability problems earlier and thus promote their work well-being. In some countries, for example in Finland, legislation defines the qualification requirements and training requirements for professionals working in Occupational Health Care where one part of competence in assessing work ability [11]. Therefore, competence in managing and analyzing work ability risks is a key aspect of high-quality Occupational Health Care. However, there is a lack of evidence on Occupational Health Care professionals' competence level in work ability risk management and analysis. This research aims to fill this gap to improve the situation and develop operations in Occupational Health Care.

In Finland, the occupational health services system is preventive health care that the employer has a duty to arrange by law. Employers may organise curative care voluntarily [12, 11]. Employers can arrange Occupational Health Care services themselves, together with another employer, by procuring the services from the wellbeing services counties or private service

providers [13]. At the end of 2018, there were 442 occupational health units in Finland, and occupational health care agreements are estimated to have covered approximately 82% of Finland's employed workforce and 91% of employees. The number of medical centers is in the order of 70% of service providers. The occupational health units employed approximately 6,500 health care professionals [14].

The aim of this study was to describe and examine OHCPs' self-reported competence level to manage and analyze work ability risks. Ultimately the aim was to produce new knowledge related to the knowledge and skills of OHCPs to evaluate and implement work ability risk management and analysis and to identify development needs in this context. The specific research questions were:

1. What is the self-reported competence level of OHCPs in managing and analyzing work ability risks?
2. What factors are related to OHCPs' competence to manage and analyze work ability risks?

2. Methods

2.1 Design and participants

A descriptive, cross-sectional study design was applied according to STROBE statement [15]. One Finnish private medical center was selected purposively for this study. This center represents approximately the average Occupational Health Care provider in Finland, having about 650,000 personal care customers and approximately 25,000 customer companies under its care. Total sampling at the organizational level included all OHCPs (N=1703) from the center. The inclusion criteria were that the person worked closely with work ability support as an occupational health nurse, occupational physician, psychologist, or physiotherapist. A named contact person approached the potential participants by emailing a response link to an

electronic survey and an information letter about the study. The invitation to participate in the survey was also promoted on the organization's intranet website.

2.2 Data collection and instrument

The data were collected electronically between May and June 2018 using the Occupational Health Care Professionals' Competence in Work Ability Risk Management and Analysis (Comp-WARMA) questionnaire developed for this study. The Comp-WARMA measures Occupational Health Care professionals' self-reported competence level in work ability risk management and analysis. It is a 48-item instrument divided into four subscales (work ability monitoring 15 items, early response 9 items, sickness absence monitoring 11 items, and return-to-work support 13 items). The work ability monitoring subscale measured knowledge of legislation and the roles of occupational health care, and skills to identify work ability risks. Early response subscale focused on questions related to knowledge of working ability support operating models used by customer companies and skills of using forms of rehabilitation. The sickness absence monitoring subscale measured knowledge of the alert limits for sickness absences in the customer companies and skills to use sickness absence data. The return-to-work support subscale of the instrument inquired knowledge of social insurance tools and knowledge of options for return-to-work support, as well as skills of evaluating the success of return-to-work support. The response scale is a 4-point Likert scale (1=poor, 2=average, 3=good, 4=excellent). The Comp-WARMA was developed based on previous empirical literature [e.g., 16, 17] in the fields of Occupational Health Care and the context of work ability promotion and work disability prevention, as well as following national key legislation and regulations of Occupational Health Care and Good Occupational Health Care Practice [11, 18, 5]. Good Occupational Health Care Practice is a central guideline for Occupational Health Care services in Finland [5]. The Comp-WARMA instrument was pilot tested with a sample of 22 OHCPs to

evaluate the clarity of the response instructions and item content. No modifications were made after the pilot test.

The eleven background variables included age (years), gender, profession, level of training of physicians, length of working experience in Occupational Health Care (years), education level, current working hours in Occupational Health Care, number of customer companies, number of customers, number of coordinated customer companies and participation in continuing education focused on the management and analysis of work ability risks. Education levels were assessed based on the most recent education, which was divided into the following options: College, University of Applied Sciences, University or Something else, what. Background information on physicians' training was mapped with the options: completed specialization training, ongoing specialization training, long training completed at the Finnish Institute of Occupational Health or general practitioner. Background information about participation in continuing education with an emphasis on the management and analysis of work ability risks was divided into answer options: During the previous year, Within five years, More than five years ago or Has not participated in continuing education. In addition, respondents' perceptions of work ability risk management and analysis in general (for example, the importance of interprofessional cooperation in the management and analysis of work ability risks and the sufficiency of working time to carry out the management and analysis of work ability risks) were inquired with nine 4-point Likert scale questions (scale 1 = poor – 4 = excellent). Potential sources of bias in this study were selection bias and information bias. Selection bias was tried to minimize by having a predetermined recruitment plan of study participants. Selection bias in evident as not all selected persons took part in the study, because the voluntary nature of the study. Information bias could be present as the data were collected with newly but systematically developed instrument [15].

2.3 Data analysis

The data were analyzed statistically using SPSS version 26.0 (SPSS for Windows, Release 26.0; SPSS Inc., Chicago, IL, USA). The four-point response scale (poor, average, good, excellent) of the self-assessed questionnaire items was used. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to examine the study variables. Data were classified into categories. The sum variables were formed by adding up the answer codes of the variables related to the same theoretical entity and dividing the thus obtained sum by the number of variables. The range of values of the sum variables is the same as that of the individual questions, and the results are easier to interpret. The variables used in the classification were age (years), gender, profession, level of training of physicians, length of working experience in Occupational Health Care (years), education level, current working hours in Occupational Health Care, number of customer companies, number of customers, number of coordinated customer companies, and participation in continuing education. The total value of the instrument was determined by calculating the average of the instrument's sum variables by first adding up the scores and dividing the obtained value by the number of sum variables.

The association of background variables with Comp-WARMA sum variables and possible associations between Comp-WARMA study variables was tested using Multifactor ANOVA (Multifactor Analysis of Variance, F-values with degrees of freedom (df) and p-value). Pairwise comparisons between the levels of independent variables were performed using the Sidak multivariate test. This test controls the Type I statistical inference error so as not to over-readily interpret a difference as statistically significant. Internal consistency was assessed using Cronbach's alpha coefficient. Results with $p < 0.05$ were considered statistically significant throughout the statistical evaluation [19].

2.4 Ethical considerations

The study followed good scientific practice [20] and ethical standards [21]. Ethical approval was obtained from the University Ethics Review Committee (Ethical committee code: 67/2017), and formal permission to collect data was applied for in accordance with the organization's practices. The participants received written information on the research, participation was voluntary, and confidentiality and anonymity were guaranteed. Responding to the questionnaire was considered as informed consent.

3. Results

3.1 Participants

In total, 169 people responded to the questionnaire (response rate of 10%). The mean age of the respondents was 46.5 (range 24-70, SD 11) years; the majority (86%) of the respondents were female and occupational health nurses (55%, Table 1). Most of the physicians were occupational health specialists (56%), and one-fifth had specialization studies in progress (25%). The Occupational Health Care qualification training of the Finnish Occupational Health Institute had been completed by 17% of the responding physicians.

Almost half (44%) had a university of applied sciences degree, followed by a Master's degree (34%), a college degree (17%), and some other degree (5%). Respondents' work experience in Occupational Health Care ranged from 0 to 48 years (mean 12.8 years, SD 10). Most (85%) of the respondents worked full time in Occupational Health Care.

Respondents reported the number of occupational health care customer companies under their care to be 0–700 and personal care customers to be 0–5,000. Respondents reported that the number of coordinated customer companies under their responsibility varied. About a third of them had 2–5 coordinated customer companies.

Half of the respondents (52%) had participated in continuing education on the management and analysis of work ability risks during the last five years, whereas one-third had not attended continuing education at all.

Respondents rated that work ability risk management is important (mean 3.90) and that interprofessional cooperation is a key part of the work (mean 3.51). Furthermore, the respondents rated as the weakest that they had enough time to do their work (mean 2.72) and that customer companies understand the importance of work related to work ability risk management (mean 2.94). Overall, respondents rated their competence level in managing and analyzing work ability risks as good (mean 3.14). (Table 2.)

3.2 Occupational Health Care professionals' competence level in managing and analyzing work ability risks

OHCPs' knowledge and skills in managing and analyzing work ability risks varied. The OHCPs' mean level of knowledge and skills in work ability risk management and analysis was 3.22 (Table 3). Overall, the variable levels of work ability monitoring knowledge and skills was rated highest (mean knowledge 3.33 / skills 3.37). The second highest was sickness absence management knowledge and skills (mean 3.33 / 3.32), followed by return-to-work support knowledge and skills (mean knowledge 3.10 / skills 3.30). Respondents assessed their early response knowledge and skills to be weakest (mean knowledge 2.92 / skills 3.05).

3.3 Association of background variables with OHCPs' competence in managing and analyzing work ability risks

In the univariate analysis, OHCPs' competence level in work ability risk management and analysis was associated with the number of customer organizations worked with, attendance of continuing education regarding work ability risk management and analysis, amount of work experience, type of employment, age, and gender (Table 4).

Some factors related to OHCPs' competence to manage and analyze work ability risks were identified. Overall, variable-level work experience was associated with early response skills. As work experience increased, the respondents were more able to provide early response at a statistically significant level ($\beta = 0.025$, $p = 0.026$). Age, work experience, and quality of employment relationship were associated with sickness absence monitoring skills. Increased age was associated with decreased skills ($\beta = -0.019$, $p = 0.007$). Increased work experience was statistically significantly related to sickness absence monitoring skills ($\beta = 0.028$, $p = 0.05$). Skills in sickness absence monitoring were statistically significantly higher ($p = 0.015$) for those working full time in Occupational Health Care than for those working part-time. Gender and participation in continuing education were associated with the level of knowledge about return-to-work support. Men estimated that they knew more about return-to-work support ($p = 0.044$) than women did. In addition, those respondents who did not receive continuing education knew less about return-to-work support than those who had participated in the previous year ($p = 0.009$), the last five years ($p = 0.005$), and more than five years ago ($p = 0.028$) (Table 4).

4. Discussion

This study provided unique evidence of OHCPs' competence level in work ability risk management and analysis. OHCPs' competence in managing and analyzing work ability risks is at a good level, but some development areas were identified. The study demonstrated that

several personal and work-related factors were associated with competence levels in work ability risk management and analysis.

Competence was assessed as mediocre on the Comp-WARMA instrument subscales, and there were no major differences in the competence in the various aspects of work ability risk management and analysis. An interesting result is that one-third of respondents had not attended continuing education in work ability risk management and analysis at all. This result reinforces the notion that more work ability risk management and analysis training is needed to address skills gaps.

Managing and analyzing work ability risks was considered important, and interprofessional cooperation was seen as a key part of the work. These results are in line with the contents of the key Occupational Health Care legislation [11], the regulation [18], and Good Occupational Health Care Practice [5]. In contrast, work ability risk management and analysis was assessed to be only a fairly central part of day-to-day work, and the employer was assessed to value the work related to work ability risk management and analysis fairly well. In addition, the OHCPs' competence level in work ability risk management and analysis work was only fairly good. The customer companies were assessed as understanding the significance of the work related to work ability risk management and analysis only quite well. Still, the time available to complete work tasks was only quite good. The results point to shortcomings in structural-level collaboration and support previous research data [22]. Improving cooperation at the structural level, both within the employer organization and in occupational health cooperation with customer organizations, could increase the understanding of the importance of work related to work ability risk management and analysis and allow for additional resources.

Competence was highest in work ability monitoring and weakest in an early response. The lowest competence in early response may indicate that early response focuses on anticipating

work-related risks, which is an abstract sub-area compared to other aspects of work ability risk management and analysis; thus, its implementation in practice can be challenging. However, the result is clinically interesting, as recent emphasis has been placed on early response in promoting work ability.

The key results on the promotion level of work ability support and work ability management showed that respondents rated their knowledge and skills to be only good in Good Occupational Health Care Practice as well as legislation considering work ability management and analysis. Nevertheless, at the same time, the results indicated that respondents were able to act in a work ability-oriented, ethical way, and in the manner required by the obligation of professional discretion. These results are contradictory because, without a good knowledge of occupational health legislation and Good Occupational Health Practice, it is impossible to work as required. The self-reported competence levels in the comprehensive monitoring of work ability and the functional capacity of customer companies' personnel was also deficient. This result does not meet the shortcomings set for the care of the customer companies in occupational health services, as the service should be holistic and focus on a proactive approach [11]. Further, on the level of primary prevention and early response for the promotion of work ability, practical measures to support work ability, such as ability to negotiate, knowledge of the rehabilitation system, the customer company's early response approach documents, and occupational safety risk assessment documents, was only known quite well. The competence level in these areas is significant because, in order to support and maintain work ability, OHCPs need to be familiar with various instructions and procedures so that work ability risks can be systematically screened [23] and the advice and guidance required by law implemented effectively [24]. However, it would seem that more guidance is also needed, for example, to support decision-making and ensure follow-up procedures. It is a disquieting result that the rehabilitation system is not known in the best possible way. A good level of competence in utilizing opportunities in

the field of rehabilitation is needed in Occupational Health Care in order to refer to the scope of rehabilitation [25] and thereby reduce lost labor input and early retirement [26]. In addition, the results of sickness absence monitoring at the level of secondary work ability prevention in terms of promotion showed that individual-level sickness absence monitoring was well-known. The result is important because the individual's own opinion predicts their future ability to work in terms of both the duration and frequency of sick leave. [27, 28.] However, the competence level in sickness absence monitoring at the customer company level was weaker. The result indicates an ambiguity in the follow-up of sick leave in terms of cooperation with the customer company. It is essential to agree on and know the procedures for monitoring sickness absence in occupational health cooperation. Effective cooperation would help reduce sick leave and achieve cost savings [16]. Finally, the results of the study on the level of tertiary prevention in terms of work ability support and return-to-work support showed that the competence level in assessing possibilities of work modifications, assessing the success of return-to-work, and supporting the customer company in the implementation of the return to work were only fairly good. Overall, various options for return-to-work support, such as partial sickness benefits, were not known flawlessly. These factors impact what kind of return-to-work support measures are used and recommended by OHCPs [29].

There were several factors associated with OHCPs' competence level to manage and analyze work ability risks. Most of these results were consistent, but some were contradictory. For example, the age of the respondents was related to their competence level in sickness absence monitoring. The older the respondent, the less well they were able to manage and analyze work ability risks. Furthermore, the respondents' work experience was related to their competence level in sickness absence monitoring. The more work experience respondents had, the better they managed and analyzed work ability risks. These two factors related to the competence level in sickness absence are inconsistent unless the result is explained by the fact that older

respondents are more critical in assessing their competence, or their previous work experience has been acquired at least in part outside Occupational Health Care. In addition to the conflicting results, there was also a worrying result in the factors related to the competence level of work ability risk management and analysis. The results showed that participation in continuing training in work ability risk management and analysis increased self-assessed competence to support the return to work. The fact that almost half of the respondents had not participated in continuing education can be considered a worrying result. The lack of participation in training of occupational health personnel may impair their competence to manage and analyze work ability risks.

Occupational health services cannot act and respond in accordance with the requirements and expectations set for them by law [11] and Good Occupational Health Care Practice [5] if the competence of Occupational Health Care personnel is deficient. In order to prevent the sustainability gap, it is important to support careers and raise employment rates. The most important task of Occupational Health Care is to support work ability. Occupational Health Care can function as integrated into various social and health services, many benefits, and rehabilitation. In order to manage and analyze work ability risks in Occupational Health Care, it is important to ensure that OHCPs are adequately qualified to perform this demanding task consistently and effectively. The results of this study showed that both basic and continuing education are needed for occupational health risk management and analysis work for Occupational Health Care professionals. The education could be, for example, courses offered by a university or the Institute of Occupational Health. In addition, it could be possible to increase competence by describing effective methods of managing and analyzing work ability risks in multiprofessional cooperation in occupational health care. For example, an electronic guide that presents the role of different occupational health care professionals in managing and

analyzing work ability risks could be a new useful tool in the development of occupational health care.

This study has some limitations regarding the newly developed instrument and data collection. The Comp-WARMA instrument was constructed systematically based on earlier studies and national legislation. It showed high internal consistency with a Cronbach's alpha coefficient of 0.98 for the full scale (range in sum variables from 0.79 to 0.94) [30]. High internal consistency may indicate redundancy in items, and therefore, further development of the instrument should be conducted to identify unnecessary items and adjust the number of items. The needs for further development of the instrument include testing the construct validity of the Comp-WARMA and stability with test-retest of Comp-WARMA. Additionally, the instrument requires further validation with larger sample to analyze construct validity and responsiveness. In the future, the equivalence of the instrument should be evaluated to determine possible bias and measurement errors [31, 32]. In the study selection bias may exists due to selective non-participation that might have biased the estimates and that data are cross-sectional. This limits conclusions on causality and the direction of associations. The Comp-WARMA instrument focused on assessing self-reported knowledge and skills around work ability risk management and analysis. In the future, to cover all the theoretical dimensions of competence, enlargement of the items to cover attitudes and experiences could be beneficial. However, this study provided a preliminary version of the Comp-WARMA instrument to measure the self-reported professional competence level of OHCPs in managing and analyzing work ability risks. The instrument produced both statistically and clinically significant results that apply to the practical work of Occupational Health Care, for example, in the assessment and development of the competence of OHCPs. The number of responses relative to the population size (N=1703) remained quite small (n=169), which undermines the generalizability of the study. To increase the number of respondents, the response time was extended by one week, and one reminder to

respond to the survey was posted on the organization's website. Despite these efforts, only a few responses were obtained.

5. Conclusion

OHCPs self-reported their competence in managing and analyzing work ability risks partly as good, partly as variable, and partly as deficient. The knowledge and skills of OHCPs in the management and analysis of work ability risks do not fully meet the objectives of Occupational Health Care legislation or Good Occupational Health Care Practice. In work ability risk management and analysis, there are development needs at all levels of work ability promotion, both in the theoretical and at the practical level. Therefore, OHCPs need more information and education on work ability risk management and analysis to ensure high-quality, appropriate, and effective care.

Future competence-related research could benefit from including an assessment of OHCPs' attitudes and experience in managing and analyzing work ability risk.

Acknowledgments

The authors would like to thank all the Occupational Health Care professionals who participated in the study.

Conflict of interest

The authors declare that they have no conflict of interest.

Funding

This research received no external funding.

Authors' contributions

JS was the main author of the manuscript and was involved in all aspects of the study. MS, LS, and JL contributed to the design and planning of the study, the data interpretation, and the writing of the manuscript. JK contributed to performing the statistical analyses. MS and RS supervised the study, and all the authors (JS, LS, JK, RS, MS) read and approved the final manuscript.

References

[1] Mänttäri S, Oksa J, Lusa S, Korkiakangas E, Punakallio A, Oksanen T, Laitinen J. Interventions to promote work ability by increasing physical activity among workers with physically strenuous jobs: A scoping review. Scand J Public Health. 2021;49(2):206–18.

[2] Pransky GS, Loisel P, Anema JR. Work disability prevention research: current and future prospects. J Occup Rehabil. 2011;21(3):287–92.

[3] World Health Organization. Regional Office for Europe. Good practice in occupational health services: a contribution to workplace health. Copenhagen: WHO Regional Office for Europe; 2002.

[4] Loisel P, Anema JR. Handbook of work disability: Prevention and management. New York, NY: Springer; 2013.

[5] Uitti J. Hyvä työterveyshuoltokäytäntö. 3–5 edn. Helsinki: Ministry of Social Affairs and Health: Institute of Occupational Health. 2014. [In Finnish].

[6] Institute for Work & Health [cited 2022 Apr 1]. 2015. Primary, secondary and tertiary prevention. Available from: https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention/.

[7] Deist L, Winterton FD. What Is Competence? Hum Resour Dev Int. 2005;8(1):27–46.

[8] Fukada M. Nursing competency: Definition, structure and development. Yonago Acta Med [Internet]. 2018;61(1):1–7.

[9] Coomer K, Houdmont J. Occupational health professionals' knowledge, understanding and use of work ability. Occup Med (Lond). 2013;63(6):405–9.

[10] Suleiman AM. Occupational Safety and Health professionals' work ability concept perception, and comprehension of regulations. Work. 2017;56(3):483–90.

[11] Occupational Health Care Act. 1383/2001. [cited 2022 Oct 9 1]; Available from: https://www.finlex.fi/fi/laki/ajantasa/2001/20011383/.

[12] Ministry of Social Affairs and Health. [cited 14.1.2023]. 2023. Occupational Health Care. Available from: https://stm.fi/en/occupational-health-care/.

[13] Finnish Institute of Occupational Health [cited 14.1.2023]. 2023. Työterveyspalvelujen järjestäminen. Available from: https://www.ttl.fi/teemat/tyoterveys/tyoterveyshuolto/tyoterveysyhteistyo/tyoterveyspalvelujen-jarjestaminen/ . [In Finnish].

[14] Takala E-P, Leino T, Harjunpää K, Hirvonen M, Kauranen T, Liljeström K, et al. Työterveyshuollon toiminta ja laatu Suomessa 2018. Finnish Institute of Occupational Health [cited 14.1.2023]. 2019. Available from: https://www.julkari.fi/bitstream/handle/10024/138566/TTL-978-952-261-8917.pdf?sequence=6&isAllowed=y/ . [In Finnish].

[15] Vandenbroucke JP, von Elm E, Altman DG, Gøtzsche PC, Mulrow CD, Pocock SJ, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): explanation and elaboration: Explanation and elaboration. Epidemiology [Internet]. 2007;18(6):805–35.

[16] Taimela S, Justén S, Aronen P, Sintonen H, Läärä E, Malmivaara A, et al. An occupational health intervention programme for workers at high risk for sickness absence. Cost effectiveness analysis based on a randomised controlled trial. Occup Environ Med. 2008;65(4):242–8.

[17] Schmidt L, Sjöström J, Antonsson A-B. How can occupational health services in Sweden contribute to work ability? Work. 2012;41 Suppl 1:2998–3001.

[18] Degree 708/2013. Government Decree on the principles of good occupational health care practice, the content of occupational health care and the qualifications of professionals 708/2013. [cited 2022 Apr 1]; Available from: https://finlex.fi/fi/laki/alkup/2013/20130708/

[19] Grove SK, Burns N, Gray JR. The practice of nursing research: appraisal, synthesis andgeneration of evidence. 7. edn. USA: St. Louis, Mo: Elsevier/Saunders copywright; 2013.

[20] ALLEA - All European Academies. 2017. The European Code of Conduct for Research Intregrity. Revised Edition. Allea.org. [cited 2022 Apr 1]. Available from: https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf/

[21] Beauchamp TL, Childress JF. Principles of biomedical ethics. 8th ed. Cary, NC: Oxford University Press; 2019.

[22] Saaranen T, Tossavainen K, Turunen H. School staff members' and occupational health nurses' evaluation of the promotion of occupational well-being - with good planning to better practice. J Interprof Care. 2005;19(5):465–79.

[23] El Fassi M, Bocquet V, Majery N, Lair ML, Couffignal S, Mairiaux P. Work ability assessment in a worker population: comparison and determinants of Work Ability Index and Work Ability score. BMC Public Health. 2013;13(1):305.

[24] Savinainen M, Nyberg M. Relationship between construction workers' musculoskeletal disorders and occupational health service activities. Work. 2012;41:3753–6.

[25] Roelen CAM, Heymans MW, Twisk JWR, van der Klink JJL, Groothoff JW, van Rhenen W. Work Ability Index as tool to identify workers at risk of premature work exit. J Occup Rehabil. 2014;24(4):747–54.

[26] Keysor JJ, LaValley MP, Brown C, Felson DT, AlHeresh RA, Vaughan MW, et al. Efficacy of a work disability prevention program for people with rheumatic and musculoskeletal conditions: A single-blind parallel-arm randomized controlled trial. Arthritis Care Res (Hoboken). 2018;70(7):1022–9.

[27] Notenbomer A, Groothoff JW, van Rhenen W, Roelen CAM. Associations of work ability with frequent and long-term sickness absence. Occup Med (Lond). 2015;65(5):373–9.

[28] Vuorio T, Suominen S, Kautiainen H, Korhonen P. Determinants of sickness absence rate among Finnish municipal employees. Scand J Prim Health Care. 2019;37(1):3–9.

[29] Horppu R, Martimo KP, MacEachen E, Lallukka T, Viikari-Juntura E. Application of the theoretical domains framework and the Behaviour Change Wheel to understand physicians' behaviors and behavior change in using temporary work modifications for return to work: A qualitative study. J Occup Rehabil. 2018;28(1):135–46.

[30] DeVellis RF, Thorpe CT. Scale development: Theory and applications. 5th ed. Thousand Oaks, CA: SAGE Publications; 2022.

[31] Terwee CB, Bot SDM, de Boer MR, van der Windt DAWM, Knol DL, Dekker J, et al. Quality criteria were proposed for measurement properties of health status questionnaires. J Clin Epidemiol. 2007;60(1):34–42.

[32] Souza AC de, Alexandre NMC, Guirardello E de B. Psychometric properties in instruments evaluation of reliability and validity. Epidemiol Serv Saude. 2017;26(3):649–59.

Table 1. Respondents' background information.

Background variables	**n**	**f**	**%**	**mean**	**SD**	**range**
Age	169			46.5	11	24–70
Under 29 years		16	10			
30-44 years		53	31			
45-59 years		79	47			
Over 60 years		21	12			
Gender	169					
Female		145	86			
Men		24	14			
Profession/Title	168	171				
Occupational health nurse		92	55			
Occupational health physician		30	18			
Physiotherapist		14	8			
Psychologist		3	2			
Nationwide responsibility physician		13	8			
Something else[1]		19	11			
Educational background of physicians	48					
Occupational health specialist (6+6 years)		27	56			
Specialization training (6 years) in progress		12	25			
Long training at the Finnish Institute of Occupational Health (15 credits)		8	17			
General practitioner (6 years)		1	2			
Latest level of education	169					
College		28	17			
University of Applied Sciences		75	44			
University		57	34			
Something else[2]		9	5			
Working experience in OHC, year	169			12.8	10	0–48
0–1		9	5			
1–4		29	17			
5–9		35	21			
10–19		61	36			
20–29		22	13			
Over 30		13	8			
Type of work	167					
Full-time		142	85			
Part-time		25	15			
Number of customer companies under treatment	152			66	76.6	0–700
0–29		46	25			
30–77		55	28			
Over 78		51	26			
Number of customers under treatment	133			1414	927	0–5000
0-999		42	25			
1000–1499		47	28			
Over 1500		44	26			

Number of coordinated customer companies	147			29	161	
0–1		46	27			
2–5		59	35			
Over 6		42	25			
Participation in continuing education	169					
During previous year		37	22			
Within five years		51	30			
Over five years ago		17	10			
Has not participated		64	38			

n = Number of respondents, f = frequency, % = The percentage of total, SD = standard deviation

Something else:

[1)] Occupational health nurse manager, Occupational physician manager, Physiotherapist manager, Psychologist manager

[2)] Specialization studies in Occupational Health Care, Occupational health courses

Table 2. Respondents' perceptions of work ability risk management and analysis in general.

Question/ Proposition	**Mean**	**Median**
Enough time to do work	2.72	3
Financial resources support the implementation of care	3.00	3
Significance of interprofessional cooperation	3.51	4
Significance of work ability risk management and analysis	3.43	4
Ability to manage and analyze work ability risks	3.14	3
Ability to use skills in work risk ability risk management and analysis	3.22	3
Importance of work ability risk management and analysis	3.90	4
Employer values toward work ability risk management	3.41	4
Customer companies' values toward work ability risk management	2.94	3

Mean=1-4, Median=1-4 (© Sirkka J.)

Table 3. Descriptive results of OCHPs' self-reported competence in work ability risk management and analysis.

	Items	n	Min	Max	Mean	SD	Item-to-total correlations	Inter-item correlations	α
Comp-WARMA-instrument		169	2.00	3.98	3.22	0.49			0.98
The sum of the variable									
Work ability monitoring									
Knowledge	5	169	1.20	4.00	3,33	0.52	0.64–0.75	0.48–0.73	0.87
Skills	10	168	2.10	4.00	3,37	0.47	0.56–0.75	0.34–0.66	0.91
Early response									
Knowledge	4	168	1.25	4.00	2,92	0.59	0.50–0.64	0.36–0.67	0.79
Skills	5	169	1.20	4.00	3,05	0.69	0.67–0.83	0.52–0.85	0.91
Sickness absence monitoring									
Knowledge	5	168	1.40	4.00	3,33	0.52	0.49–0.81	0.37–0.82	0.88
Skills	6	167	2.00	4.00	3,32	0.57	0.61–0.86	0.38–0.83	0.90
Return-to-work support									
Knowledge	8	168	1.50	4.00	3,10	0.68	0.61–0.88	0.43–0.89	0.93
Skills	5	168	1.00	4.00	3,30	0.65	0.71–0.88	0.65–0.85	0.94

Items = Number of items / subscale, n = Number of respondents, Min = 1, Max = 4, α = Cronbach's alpha coefficient

Table 4. The associations of background variables with occupational health care professionals' competence in managing and analyzing work ability risks

Subscale	**Variables**	***p* -value**
Work ability monitoring		
knowledge	-	
skills	-	
Early response		
knowledge	-	
skills	work experience	β = 0.025, p = 0.026 *
Sickness absence monitoring		
knowledge	-	
skills	age	β = -0.019, p = 0.007**
	work experience	β = 0.028, p = 0.05***
	the quality of the employment relationship	p = 0.015
Return-to-work support		
knowledge	gender	p = 0.044
skills	participation in continuing education	p = 0.009, p = 0.005, p = 0.028
	-	

* β describes how much the average of the sum variable increases as one year of work experience increases
** β illustrates how much the average of a sum variable decreases as the age increases by one year
*** β describes how much the average of the sum variable increases as one year of work experience increases