



INTERVENTIONS THAT INCREASE JOB SATISFACTION OF HEALTHCARE WORKERS

A Scoping Review

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ABSTRACT

Background:

Healthcare is under an increasing pressure. The shortage of the health workforce is rising. A high turnover of healthcare professionals has a negative impact on the quality and cost of healthcare services. Reducing staff turnover is for that reason a crucial objective. This study explores what healthcare organizations can do to reduce turnover. This by mapping the interventions that have been tested to improve job satisfaction and decrease intention to leave.

Method:

A scoping review has been conducted using the JBI guidelines and the PRISMA-ScR checklist. Pubmed, Web of Science and Ovid were consulted between February and April 2022. Search terms were set on interventions reducing retention of healthcare workers, combined with Boolean operators. The search was refined to recent, European studies.

Results:

23 articles were included. The interventions were associated with psychosocial factors and themes that influence intention to leave in healthcare organizations. All interventions support different influencing factors. Improving patient care is most present in the selected studies. Interventions directed at improving patient care were only in 39% of the studies effective for improving job satisfaction. 5 studies focused exclusively on improving the psychosocial working conditions and wellbeing of the caregivers. 80% of these studies were successful and had a significant positive outcome on job satisfaction.

Conclusion:

Interventions focusing on thriving work conditions and wellbeing of caregivers seem promising for retaining caregivers and reducing shortage. More research is necessary to support this conclusion.

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INTRODUCTION

RATIONALE:

Healthcare is facing great challenges. The WHO predicts a global shortage of 18 million healthcare workers by 2030 (1). One of their sustainable development goals (SDG) is to invest in attracting new healthcare personnel, their training and the retainment of the current workforce (1, 2). Attracting and retaining caregivers is also a priority within Europe (3). In Flanders, as well as in other European countries, many healthcare professions are bottleneck professions: vacancies are not filled, and healthcare training programs are understaffed (4). This while healthcare is under increasing pressure as a result of a growing demand for care because of an aging population and a greater complexity of care and due to more chronic and multiple pathologies and advanced treatments (5, 6).

High levels of turnover of health personnel have a negative impact on the quality of healthcare, as it threatens the continuity of care. In addition, a significant economic cost is associated with caregiver turnover due to the expenses associated with recruiting and training new staff (3, 7). Finally, staff turnover - when it occurs at a high rate - can result in a declining productivity and staff morale (8, 9). Therefore reducing staff turnover - among other strategies - is an important approach to address the tightness of the healthcare labour market (4, 10). Part of the solution to retain staff is ensuring 'workable work', which is defined as work that does not make you sick or overworked, is motivating and engaging, and provides opportunities for learning and development. The healthcare sector in Flanders had a workability rate of 50.8% in 2019 compared to 60.3% in 2010 (11). This means that the pleasantness experienced in working in healthcare in Flanders has decreased almost 10% in a period of 9 years.

The drainage of healthcare professionals can manifest itself at different levels. A healthcare professional can leave their job, leave the organization, or leave the profession (12). Solutions and strategies also can be located at different levels: at the individual level of healthcare professional, the team level and at the organizational level. Society has a responsibility as well, as this is a worldwide societal problem (13). This study focuses on what healthcare organisations can do to retain employees at team and organisational level.

Studies focusing on caregiver retention factors primarily take two outcomes into account. The strongest predictors of staff turnover are intention to leave and job (dis)satisfaction (10, 14, 15). Persistent job dissatisfaction and intention to leave are stages in a complex decision-making process that can lead to turnover intention (12, 16). Two decades of extensive research have shown that there are no rapid and unified solutions (17). Yet, though retention of caregivers has a multiple and complex nature, searching for solutions to solve the growing global shortage of healthcare workers is an urgent matter (18).

Research has shown that multiple factors influence job satisfaction and job retention (12, 18). Important predictors of retention are to be found in individual factors, social capital, decision latitude, work demands and patientcare. Factors influencing job satisfaction and retention stand on a (work) balance, in which there must be a balance in the effort that caregivers put forth and the rewards they receive in return (18). Less research has been done on what interventions in the workplace contribute to job satisfaction and the effectiveness in these interventions (19). Yet it is known that well supported environments are associated with more positive outcomes (3). Consequently, there is a need for more rigorous research to assess the effectiveness of retention interventions (3). A first step is to inventory effective interventions that currently exist.

OBJECTIVES:

The aim of this scoping review was to identify current best evidence on the types of interventions that have been tested to improve job satisfaction and decrease the intention to leave the job among healthcare professionals and their effectiveness. We solely focused on recent European research. Nationwide healthcare systems take many forms and varies, due to economic and social factors. Moreover, the experience of employment in healthcare is influenced by these economic and social factors, as well as culture.

METHODS:

The JBI guidelines and the scoping review framework by Peters et al. (20) and the PRISMA-ScR Checklist (21) were used to construct this scoping review. A literature search was conducted between February and April 2022. Databases Pubmed, Web of Science and Ovid were consulted. The inclusion criteria, search strategy and process are presented in Table 1 and 2 and Figure 1. Boolean operators were used. The search was refined to recent, European studies. After the screening of title and abstract 70 papers were left over for full text screening.

Topic	Inclusion
Publication date	< 10 years
Population	Healthcare workers with direct patient contact
Region	European Countries
Method	Intervention studies
Outcomes	Job satisfaction, job retention
Language	English or Dutch

Table 1: Inclusion criteria

Database	Pub med, Web of Science, Ovid
Search	Healthcare workers, health personnel (Mesh)
	Job satisfaction, Job retention
	Improve, Enhance, Retain
Filter	>10 years, English or Dutch, European research
	Intervention studies

Table 2: Search strategy

Database:	Pubmed: 1089	Web of Science: 218	Scopus: 454
< 10 jaar, English, Dutch	721	157	205
European countries/Region	-	50	48
Title/abstract: Europese interventie studies	63	4	3

Figure 1: Search process

Prior to this scoping review, the authors conducted a literature review mapping the facilitating and impending factors of staff turnover in healthcare. We identified psychosocial factors which healthcare organisations can impact. The predictors of retention were distinguished into five themes and four extensive factors, presented in figure 2 (18). In the current study, we used this framework to categorize the characteristics of the interventions found in the literature. In this scoping review the interventions were analysed within this framework as these are the factors to influence to boost job satisfaction and reduce intention to leave the job.



Figure 2: Factors that influence job retention of healthcare workers(Averens, Van den Broeck & Franck, 2022)

The inclusion criteria and search strategy have been discussed and agreed on between all authors. This has been presented to an expert panel co-working in a research project on job retention of healthcare workers as well. The search and selection of the articles is done by one researcher. The results have been discussed between all authors.

RESULTS:

SELECTION OF SOURCES OF EVIDENCE

Twenty-three articles matched the final inclusion criteria and were included for this scoping review. All the articles were summarized in Table 3 (appendix 2). This table contains the reference to the article, country of origin, study population, the tested intervention in the study, the study methods and a summary of the results concerning job satisfaction and job retention.

CHARACTERISTICS OF THE INCLUDED STUDIES

Only intervention studies were included. All studies' outcome variables concerned job satisfaction. Job retention was not measured in not even one of the intervention studies as an outcome. All studies, except one (22), measured multiple outcomes related to job satisfaction, such as mental wellbeing (23-35), workload (25, 33, 35-37), decision latitude (33, 36-38), leadership (27, 39), organisational support and engagement (25, 27, 32, 33, 36, 40), and social capital (27, 33, 36, 38, 40). Twenty-one studies did at least a pre-post evaluation of the intervention using questionnaires, some of them used multiple questionnaires at more than two moments in time. Two studies only used a qualitative method to evaluate the intervention with individual and/or focus group discussions (31, 41). Five studies did a mixed method evaluation, conducting both questionnaires and individual interviews (22, 32, 38-40). Eight studies did not include a control group (22, 31, 33, 36, 40-43).

CHARACTERISTICS OF THE INTERVENTIONS

Table 4 and 5 (appendix 3 & 4) present the different interventions in connection with the five themes and four extensive factors. As the prior literature search points out all the factors and themes are interrelated and influence each other (18). Therefore none of the included studies approached a solely factor; all include different factors.

The five themes: Individual factors, social capital, decision latitude, work demands and patientcare:

Eighteen of the twenty-three included studies tested interventions that focused on improving patientcare. In all these interventions, a training was presented at healthcare workers to improve quality of care (22-25, 27, 31-40, 42-44). Nine of these interventions were directed at improving the quality of care for patients with dementia by offering a psycho-educational training (23-25, 34, 35, 37, 38, 40, 44). One intervention offered an online training program to improve skills and knowledge in daily care for elderly (32). Another study implemented a peer group supervision on patientcare (31). Three interventions intended to improve the workplace by reorganisation of the daily working method to benefit patients (22, 42, 43). The last four studies implemented an organisation wide quality improvement program focussing on different pillars. Next to improvement projects on patient care, they included projects to improve working conditions and leadership within the organisation (27, 33, 36, 39).

The trainings affected other important variables as well. The decision latitude of healthcare workers was addressed as personal development was supported (45). As personal competence grows and benefits by presenting a training, consequently the theme of individual factors is touched as well (12, 45, 46). In contrast, the implementation of a new working method is meant to overcome challenges at work and to diminish one's workload, a training to implement a new working method can increase stress and pressure and may (temporarily) raise the complexity of care and workload.

The effect on job satisfaction of these eighteen interventions focusing on patient care varied. Seven interventions showed a significant increase in job satisfaction (22, 31, 32, 35, 36, 40, 42), seven studies did not measure a difference before and after the intervention (23-25, 27, 37, 38, 44) and three of the studies measured a decrease in job satisfaction (33, 34, 43), in one study the results were not yet known (39).

Five studies did not focus on patient care but on improvement of the psychosocial working conditions (26, 28-30, 41), meeting different factors influencing job retention. One intervention made it possible for employees to have private coaching sessions, focussing on personal development and job coaching, to gain new perspectives on existing tasks and challenges, make resources more visible, and make the individual working situation more constructive (41). This intervention affects the themes individual factors, decision latitude and work

demands. It had a positive effect on job satisfaction, though it should be mentioned that it is only studied in 4 individuals and the evaluation existed of individual interviews.

Two of the studies included interventions to raise the positive psychological capital (28, 29); one group intervention and one individual intervention for employees to follow online. Both resulted in increased job satisfaction, while job satisfaction of the control group decreased. The themes affected with this type of intervention are individual factors, decision latitude and work demands. In the group interventions social capital was influenced as well.

The last two studies offered a psychosocial skills or competency training and counselling. Both interventions consisted of resilience training, and cognitive behavioural as well as solution-focused counselling (26, 30). Such interventions meet the individual factors, the social capital and the decision latitude theme. Only in one intervention the job satisfaction scores increased significantly by 0.40 (95 % CI 0.28–0.59, $P = 0.01$), while the control group showed no changes (26). The other study did not measure a significant change in job satisfaction for this intervention.

Extensive factors: Leadership, communication, recognition and shared values

Improving communication is a factor often included in the different interventions. It is addressed in the psychosocial training of professionals in the improvement of patient care (23-25, 34, 35, 37, 38, 40, 44) . Both inter-professional communications skills are addressed as well as communication skills to clients and patients. Similar are the interventions offering psychosocial skills or competency training and counselling for professionals (26, 30). The team training session focusing on positive psychological capital (28) and the peer group supervision model (31) have a focus on communication as well. For organisation wide quality improvement programs (27, 33, 36, 39) communication is important to get the strategy rolled out in the entire organisation.

Four interventions implemented in the whole organisations all have a pillar focussing on leadership (27, 33, 36, 39). Although these interventions include both factors communication and leadership, not one intervention resulted in a positive effect on job satisfaction. The five interventions not focussing on patient care but at improving psychosocial working conditions address self-leadership (26, 28-30, 41), as they are encouraged to take up responsibility for their job and increasingly

use cognitive and behavioural self-influencing strategies in order to optimize their own motivation and performance (47). Four of these five interventions had a significant positive outcome on job satisfaction (26, 28-30, 41).

The last two factors that contribute to retention of health workers are less present in the interventions. Shared values are important in implementing changes on team or organisational level. It includes acceptance of goals and values that are present within the organisation or team (17). Six of the included interventions were implemented in teams or through the whole organisation. Thriving shared values is advised, but there was no mention of it in the articles (28, 31, 33, 39, 42, 43). Recognition or respect from managers are important for job satisfaction (48-50), these are not taken into account in the included studies.

DISCUSSION:

SUMMARY OF EVIDENCE:

With this review an overview was provided of tested interventions to improve job satisfaction of healthcare workers and the effectiveness of these interventions. This searching for solutions to solve the urgent global shortage of healthcare workers. A part of the solution to retain personnel is to provide workable work. This is defined as work that does not make you ill or stressed, work that is motivating and attractive and offers chances to learn and develop (4, 51). Increasing occupational wellbeing is a strategy to follow to maintain healthcare personnel. Engagement in occupation is necessary for the experience of positive wellbeing at work (52). The self-determination theory determined conditions that facilitate intrinsic motivation, social development and well-being. Three psychological needs enhance self-motivation and mental health: autonomy, competence and relatedness (53). The significance of these needs also occurs in occupational wellbeing (52, 53).

Only 11 of the 23 included studies had a positive outcome on job satisfaction, three interventions showed a negative impact, nine studies showed no significant changes in job satisfaction. The implementation of an intervention most often requires an effort of healthcare workers, because a new way of working takes time and energy of the participants. The effort-reward imbalance model (ERI-model) of Siegrits (54) emphasizes that there must be a reciprocity between the effort employees put in their job and the reward they receive in return (49, 54). When implementing interventions, the return of investment must be large enough that healthcare workers get rewarded for the efforts they make. Karasek and

Theorell (1990) addressed the importance of employee participations, autonomy and social support in the professional life in their 'job demand-control-support model' (55). The implementation of new interventions must be well supported and not imposed by the organisation when job satisfaction is an outcome.

Autonomy is a cornerstone in the healthcare practice, it is an essential attribute required to achieve success as a primary care provider, it is necessary for the development and advantage of the professional role identity (56). Decision latitude is close related with autonomy. Karasek (1979) defined 'decision latitude' as 'the working individual's potential control over his tasks and his conducts during the working day' (55). This construct has frequently been shown to influence employee well-being (57). Decision latitude has a stimulating impact on personal accomplishment and dedication (58). Healthcare workers who have the opportunity to develop personally and professionally and experience job control intent to stay longer in the profession and the current job. The extent of control experienced in the job as well as facilitating factors that support the caregiver to use all of his capacities and skills enhance job retention (45, 46, 48, 59, 60).

Eighteen of the tested interventions had an improvement in patient care approach, only 7 of these interventions had a significant positive outcome on job satisfaction. The quality of patientcare is just one of the factors influencing job satisfaction and job retention. It is important for caregivers to do 'a good job' and to help their patients/clients in the best possible way (17, 61). Implementing new methods of working challenges healthcare workers to grow and develop, conditioning decision latitude. But also work demands, since implementing changes can burden the already occupied health workers (48, 61). Improvement projects must be carefully considered and well argued before implementation.

Five studies were directed at the psychosocial working conditions and wellbeing of the caregivers. Four of these proved successful and had a significant positive outcome on job satisfaction. Providing a good working environment is essential (3). Research on improving the psychosocial working conditions is under-represented. A thriving work environment supports and facilitates 'workable work' (11, 51). More research is necessary testing interventions that support a good psychosocial work environment, including different psychosocial factors that influence job satisfaction and job retention.

Interventions can be person- or organization directed or both. A combination of person- and organisation directed intervention have longer lasting positive effects: 12 months and over. Person directed interventions have a faster effect, 6 months or less. It is important that interventions have to stay alive or be repeated, because the effects diminishes over time (62).

LIMITATIONS:

All types of healthcare professionals and healthcare settings were included in this study. No distinction was made between professions or type of care. The only criterium to include studies was that the intervention group had direct contact with clients or patients. Research was mostly directed at nurses and doctors. The most common setting was elderly care, represented as well is the hospital setting and general practices.

This scoping review focused on European intervention studies. Little research has been done in Europe to improve the psychosocial working conditions. Inspiration can be found in American and Asian research. More research has been conducted in these continents influencing a thriving work environment and supporting professional development such as role development and clinical leadership.

This study focuses on interventions on the organisational level. Society has a role in retention of healthcare workers as well. Social image and recognition from society can be improved. Health policy and legislative legitimacy are important factors to consider when, by example, investigating role development and clinical leadership to support job satisfaction. Organisations need the support of society to tackle the problem of the shortage of healthcare personnel.

CONCLUSIONS:

This scoping review aims were twofold: 1) to identify current best evidence on the types of interventions that have been tested to improve job satisfaction and decrease the intention to leave the job among healthcare professionals and 2) to provide an overview of the effectiveness of these interventions. Most interventions were directed at improving patient care, thereby also impacting job satisfaction. Interventions focussing on the psychosocial working environment were less explored but seem effective. More research must be conducted on the thriving work environment.

CONFLICT OF INTEREST

The authors have no conflict of interest to report.

APPENDIX 1: TABLE 3 SUMMARY OF INCLUDED ARTICLES

No	Reference	Country	Method	Sample	Intervention	Effect on job satisfaction/ job retention
1.	(Ammementorp, Jensen et al. 2013, Adriaenssens, De Gucht et al. 2015) (41)	Denmark	Pilot intervention study, qualitative interview study evaluation	2 nurses, an occupational therapist, a physiotherapist, a medical secretary; All working with quality improvement in a clinical department at one hospital	Jobcoaching: Gain new perspectives on existing tasks and challenges, make resources more visible, and make the individual's actual working situation more constructive, all with the goal of promoting action, development, and learning. 2 to 4 individual coaching sessions of 1,5h	A raised potential for mutual prioritising, actions, and job satisfaction: "progressive insight leading to actions" and "expressing needs for leadership aiming for self-realization." The results indicate that coaching can be effective in enhancing not only self-insight and core performance, but also increased positive feelings.
2.	(Barbosa, Nolan et al. 2016) (23)	Portugal	Experimental study: pre-posttest control group design: 6 month follow up (baseline, posttest and follow up)	4 aged-care residential facilities: 53 careworkers	A psychoeducational intervention, designed to improve direct care workers' stress, burnout and job satisfaction, and person-centered communicative behavior in people with dementia	After 6 months no intervention effects were found for job satisfaction

3.	(Barcons, García et al. 2019) (24)	Spain	A quasi-experimental study with 2 non-randomised groups. Pre and post-intervention measurements were registered: period of one year	38 GPs working in 4 public primary-care units	A multimodal training programme (MTP): The intervention was structured as a continuing-education course with group psychoeducational activities. It was coordinated by the clinical psychologist guided by the psychotherapy model and the CCMs. Course duration was 9 hours in total and consisted of nine weekly sessions. MTP comprised different clinical group sessions (1 h/session)	Better evolution of satisfaction at work was observed: no statistical significance
4.	(Berendonk, Kaspar et al. 2019) (25)	Germany	Cluster-randomized trial	20 German long-term care facilities: 20 facilities randomly assigned to an intervention group (84 care providers, 42 residents with dementia) and a control group (96 care providers, 42 residents with dementia)	Improving quality of care with the DEMIAN intervention: a care provider training that focuses on two key domains of well-being and meaning of life: emotional attachment and positive everyday situations	A marginally significant decrease in job dissatisfaction was found (also found in the control group).
5.	(Bernburg, Baresi et al. 2016) (26)	Germany	A randomized controlled trial	54 junior pediatricians: randomized in control group and	Psychosocial competency training: a psychosocial skills training, combined with cognitive-	job satisfaction scores increased significantly by 0.40 (95 % CI 0.28–0.59, P =

				intervention group	behavioral and solution-focused counselling: 12 weekly group sessions of 1.5 h, which focused on current working situations and problems, coping strategies, and support between colleagues and future professional goals. The training sessions included theoretical input, watching videos, oral group discussions, experimental exercises, and home assignments	0.01). No significant changes were analyzed in the comparison group.
6.	(Bloemhof, Knol et al. 2021) (36)	The Netherlands	A quasi experimental study (one group, pre- and post-test design)	Nurses in a Dutch teaching hospital: All registered nurses working on a clinical ward or outpatient clinic were asked to complete the survey at baseline and again three years later. Exclusion criteria were: (i) employed less than 3 months and (ii) still in training to be a nurse.	Interventions based on a professional practice model incorporating Magnet principles	Score for overall job satisfaction increased from 7.3 to 8.0, 17 of the 19 units showed improvement in the nurse work environment.
7.	(Boersma, Dröes et al. 2017) (38)	The Netherlands	A quasi-experimental study	Caregivers of six experimental wards (n = 75)	Person-centered care interventions:	No quantitatively significant

				was compared with caregivers of six control wards (n = 36) that applied Care-As-Usual	The Veder Contact Method (VCM)	differences were found on job satisfaction. Qualitative an increase in job satisfaction was observed.
8.	(Damián Sanz, Yagüe-Fabra et al. 2019) (42)	Spain	Case study	The workers in the Pre-analytical Area of the Clinical Biochemistry Service at the Miguel Servet University Hospital of Zaragoza	Process improvement using Lean Techniques	General job satisfaction scores increased from 7,5 to 8,8.
9.	(Degen, Linden et al. 2021) (27)	Germany	A cluster-randomised, controlled trial	Personnel from GP practices: a total of 56 practices with an average of 4 participants per practice were targeted for recruitment, allowing 2 dropouts each in the intervention and control group	A multi-modal IMPROVEjob intervention: two leadership workshops, a toolbox with supplemental material, 9 month implementation phase supported by facilitators	There was no statistically significant difference regarding job satisfaction between the intervention (n = 180) and control group (n = 181), $t(361) = -0.463$, $p = 0.644$
10.	(Harty, Gustafsson et al. 2015) (28)	Sweden	A controlled study with four (2 × 2) experimental groups and two control groups	Six units (rehabilitation, social care and education units) within a non-governmental organisation: Participation was voluntary. All employees accepted the	A 10-week group intervention program that focused on learned optimism	Job satisfaction increased from 3,53 to 3,65 ($P=0,003$) in the intervention group, job satisfaction decreased in the control groups.

				invitation (N=66)		
11.	(Hess, Sidler et al. 2015) (22)	Switzerland	A prospective before-after study	25 Emergency Department staff members and 38 Hospitals GPs	the implementation of a new service model: change strategy on structure of care (redesign of the patient flow process), as well as on provider-oriented issues (formal integration of services)	The overall job satisfaction improved from 76.5 to 83.9 points (visual analogue scale 0–100; difference 7.4 points [95% CI: 1.3 to 13.5, p = 0.02]).
12.	(Kloos, Drossaert et al. 2019) (29)	The Netherlands	A two-armed cluster-randomized controlled design	128 nursing staff of the units for physically frail older adults of four Dutch nursing homes belonging to one care organization	A 8-week online intervention concerned information and evidence-based exercises of six topics of Positive Psychology, which were completed individually at home	A small significant effect on job satisfaction was measured
13.	(Leontjevas, Hooijschuur et al. 2020) (37)	The Netherlands	A stepped-wedge cluster-randomized trial	717 (90.1%) care staff or trainees, 34 (4.3%) paramedical staff, and 45 (5.7%) other staff members of sixteen dementia special care and 17 somatic care unit	'The Act in case of Depression program' describes procedures for nursing staff, activity therapists, psychologists, and physicians. It contains evidence-based pathways for depression assessment, treatment, and monitoring treatment results	No significant changes in job satisfaction
14.	(Mache, Vitzthum et al. 2015) (30)	Germany	Pilot study: a randomized control trial	Eighty-two junior physicians in their first year	A Multicomponent Psychosocial Skill Training Program involving resilience training	No significant changes in job satisfaction

				after graduation	and cognitive behavioral as well as solution-focused counseling	
15.	(Nielsen and Davidsen 2017) (31)	Denmark	Observational intervention study, qualitative interview study evaluation	A group of 10 general practitioners using a patient-centred consultation model	A peer group supervision model with the role of supervisor taken by group members in turn	Increased job satisfaction
16.	(Nilsson and Engström 2015) (32)	Sweden	An intervention study with a mixed-methods approach using quantitative and qualitative data	41 staff members of elderly care	An e-assessment and e-training program	Significant increased job satisfaction
17.	(Söderlund, Norberg et al. 2014) (40)	Sweden	A mixed method intervention study	Nursing staff of a nursing house ward for residents with dementia: 12 nurses followed the program, the entire nursing staff participated in the questionnaire	A 1-year validation method training programme on communication skills	Better working climate for entire staff and increased job satisfaction for the participants
18.	(Sprangers, Dijkstra et al. 2015) (44)	The Netherlands	An intervention study with a two-group comparison design	24 nursing aides of a nursing home for people with dementia	A training program addressing communication skills suitable for different types of dementia	No significant differences in job satisfaction
19.	(Steaphen, Olson et al. 2017) (43)	Denmark	Prospective pre-post test study	16 nurses in ICU	Quiet time protocol (quality improvement) for more sleep for patients	Job satisfaction decreased 8,19 to 7,56 (p=0,51), not significant
20.	(Van Bogaert, Van Heusden	Belgium	Longitudinal study	Nurses in an acute care	The quality improvement program	Decreased job satisfaction

	et al. 2017) (33)			university hospital	"Productive Ward – Releasing Time to Care™	
21.	(van Duinen-van den, Bakker et al. 2019) (34)	The Netherlands	A cluster randomised controlled trial using a stepped wedge design with a total duration of 18 months, with four assessments	305 nursing staff of 13 young-onset dementia special care units participated during the course of the study of whom 71 participated in all assessments	An intervention for management of neuropsychiatric symptoms in residents of young-onset dementia care units: an educational program followed by a structured multidisciplinary care program	Job satisfaction slightly decreased (estimated effect –0.40, 95% confidence interval –0.98 to 0.17)
22.	(Weltermann, Kersting et al. 2020) (39)	Germany	A cluster-randomised controlled trial	56 general practices	The IMPROVEjob intervention: 3 workshops, a toolbox and facilitators	No results published yet
23.	(Zwijssen, Gerritsen et al. 2015) (35)	The Netherlands	A cluster randomised controlled trial: a stepped wedge design	Care staff on 17 dementia special care units	A care programme that consists of an education package and of various structured assessment tools that guide professionals through the multidisciplinary detection, analysis, treatment and evaluation of treatment of challenging behaviour.	Significant positive effects were found on job satisfaction (0.93, 95% CI 0.48–1.38, a relative change of 5%)

APPENDIX 2: TABLE 4 INTERVENTIONS INTERRELATED WITH THE FIVE THEMES INFLUENCING JOB RETENTION OF HEALTHCARE WORKERS

Intervention	Individual factors	Social Climate	Decision latitude	Work demands	Patientcare
1. Jobcoaching (41)	x		x	x	
2. Person-Centered Care-Based PE Intervention (23)			x		x
3. Multimodal training program (24)	x		x		x
4. DEMIAN intervention (25)			x		x
5. Psychosocial competency training (26)	x	x	x		
6. Professional practice model magnet (36)	x		x		x
7. Veder contact method (38)			x		x
8. Process improvement using Lean Techniques (42)			x	x	x
9. A multi-modal IMPROVEjob intervention (27)			x	x	x
10. Group intervention program that focused on learned optimism (28)	x	x	x	x	
11. A new service model (22)				x	x
12. Online intervention on positive psychology (29)	x		x	x	
13. 'The Act in case of Depression program' (37)			x		x

14. A Multicomponent Psychosocial Skill Training Program (30)	x	x	x		
15. A peer group supervision model (31)	x	x	x	x	x
16. An e-assessment and e-training program (32)	x		x		x
17. Validation method training programme on communication skills (40)	(x)		x		x
18. A training program addressing communication skills (44)	(x)		x		x
19. Quiet time protocol (43)					x
20. "Productive Ward – Releasing Time to Care™" (33)			x	x	x
21. An intervention for management of neuropsychiatric symptoms in residents of young-onset dementia (34)			x	(x)	x
22. The IMPROVEjob intervention (39)			x	x	x
23. The multidisciplinary detection, analysis, treatment and evaluation of treatment of challenging behaviour (35)			x	x	x
	Individual factors	Social capital	Descision latitude	Work Demands	Patient Care

APPENDIX 3: TABLE 5 INTERVENTIONS INTERRELATED WITH THE FOUR EXTENSIVE FACTORS INFLUENCING JOB RETENTION OF HEALTHCARE WORKERS

Intervention	Leadership	Communication	Recognition	Shared Values
1. Jobcoaching (41)	x (self leadership)			
2. Person-Centered Care-Based PE Intervention (23)		x		
3. Multimodel training program (24)		x		
4. DEMIAN intervention (25)		x		
5. Psychosocial competency training (26)	x (self leadership)	x		
6. Professional practice model Magnet (36)		x		x
7. Veder contact method (38)		x		
8. Process improvement using Lean Techniques (42)				
9. A multi-modal IMPROVEjob intervention (27)	x	x		
10. Group intervention program that focused on learned optimism (28)	x (self leadership)	x		x
11. A new service model in the ER (22)	x	x		
12. Online intervention on positive psychology (29)	x (self leadership)			x
13. 'The Act in case of Depression program' (37)		x		
14. A Multicomponent	x (self leadership)	x		

Psychosocial Skill Training Program (30)				
15. A peer group supervision model (31)		x		x
16. An e-assessment and e-training program (32)		(x)		
17. A validation method training programme on communication skills (40)		x		
18. A training program addressing communication skills (44)		x		
19. Quiet time protocol (43)				(x)
20. "Productive Ward – Releasing Time to Care™" (33)	x			x
21. An intervention for management of neuropsychiatric symptoms in residents of young-onset dementia (34)		x		
22. The IMPROVEjob intervention (39)	x	x		
23. The multidisciplinary detection, analysis, treatment and evaluation of treatment of challenging behaviour (35)		x		
	Leadership	Communication	Recognition	Shared Values

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