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Hanne Derycke, Els Clays, Peter Vlerick, William D’Hoore, Hans Martin Hasselhorn & Lutgart Braeckman

Abstract

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Background. Turnover of nursing staff is a major challenge for healthcare settings and for healthcare in general, urging the need to improve retention.

Design. Survey.

Methods. Based on the longitudinal data of the Belgian sample from the European Nurses’ Early Exit study, a total of 1531 healthcare workers who remained in their job, completed in 2003 and 1 year later a self-administered questionnaire including the Work Ability Index to assess work ability. Multiple logistic regression analysis was performed adjusting for possible confounding variables.

Results. In a population with low intent to leave at baseline prospective analyses showed that a poor work ability at baseline increased the risk of high intent to leave the ward and high intent to leave the organization, 1 year later. A substantial deterioration in work ability was a risk factor for developing high turnover intentions 1 year later. Social support had no effect on the relation between work ability and all three types of intent to leave but the relation between work ability and intent to leave the ward was borderline significantly moderated by good interpersonal relations.

Conclusions. Poor work ability was a risk factor for developing turnover intentions. Maintaining good work ability and improving poor work ability becomes increasingly important to retain nurses.

Keywords: intent to leave, measuring change, nursing, turnover, Work Ability Index, workforce
Introduction

Turnover of nursing staff is a major challenge for healthcare settings and for healthcare in general. Nurse turnover can be viewed as contributing to the positive growth of an organization through renewal of personnel, the infusion of new ideas and the introduction of new practices (Hayes et al. 2006). Nevertheless, turnover can be dysfunctional when it occurs at high rate, since it is one of the most important causes of declining productivity and decreasing staff morale (Chen et al. 2008).

In a tight labour market as the nursing profession, healthcare organizations do not want to see their staff members leave and are often prepared to dedicate important resources to attract and retain qualified nurses (Glebbeek & Bax 2004). Therefore, understanding why healthcare workers leave is essential to retain them and to prevent turnover behaviour.

Despite the considerable amount of research on nurse turnover and turnover in general, no univocal definition of turnover exists. It is possible to differentiate between internal and external turnover. Internal turnover of healthcare workers can imply changing one unit for another in the same organization, whereas external turnover means moving to a new employer either to continue working in or outside the nursing profession. Within-organizational turnover can be considered as a stage preceding organizational and even professional turnover if external alternatives become more attractive than the internal ones (Krausz et al. 1995). However, a distinction between these three progressive types of turnover behaviour has rarely been made in previous research. Previous studies on nurses’ turnover mainly focussed on organizational turnover and less on occupational turnover (Simon et al. 2010). Research on internal turnover of healthcare workers is almost completely lacking. More empirical research on these different forms of withdrawal behaviour is necessary given their different consequences for healthcare organizations and healthcare in general. Whereas, internal and organizational turnover are, in particular, the concern of the management of an individual healthcare organization, occupational turnover additionally has a societal impact, resulting in a reduction of the total number of active nurses on the job market (Krausz et al. 1995).

One of the strongest and most important predictors of actual turnover behaviour besides job dissatisfaction was found to be turnover intentions (Hayes et al. 2006). Intent to leave is one of the stages in a complex decision-making process that can lead to turnover behaviour (Mobley et al. 1979). For the purpose of this study, three different progressive levels of intended turnover behaviour were distinguished, (i) intent to leave the current ward for another in the same organization; (ii) intent to leave the current organization; and (iii) intent to leave the nursing profession to start a different kind of job. Identifying predictors of these different forms of turnover intentions can lead to a better understanding of the process leading to actual turnover and to the development of adequate measures to retain healthcare workers.

Background

Nurse turnover intentions are influenced by several individual, organizational and economic factors, such as a high education level, job dissatisfaction and low organizational and professional commitment (Hayes et al. 2006, Coomber & Barriball 2007, Parry 2008). However, different forms of turnover intentions may be influenced by dissimilar factors. Simon et al. (2010) found in their study on turnover intentions among German nurses that the organizational and professional turnover intentions were associated with different variables with diverse strengths of associations. In line with the existing literature on turnover intentions, these authors found that job satisfaction and professional commitment were associated with both outcomes, but also health-related factors like burnout showed to be associated with both turnover intentions (Simon et al. 2010). Having an adequate health status is a prerequisite to perform the job tasks properly, meaning that the work demands experienced by employees need to sufficiently attuned to their physical and mental capacities (van den Berg et al. 2009). However, when this is not the case, health problems may occur which, in turn, may lead to a deliberation of the work situation and can therefore contribute to turnover intentions (Simon et al. 2010). Recently, the concept of work ability has received growing attention in this matter (Camerino et al. 2006, 2008). The concept is based on the assumption that employees’ work ability is determined by their perception of the work demands and their ability to cope with these demands. These demands depend on work characteristics, such as physical and psychosocial requirements of work and work organization. Perceived ability to cope with the demands relies on functional capacities (mental, physical and social resources) and the individual’s health, education and competences, attitudes and values (Ilmarinen & Tuomi 2004). Work ability can be measured by the Work Ability Index (WAI), developed by the Finnish Institute of Occupational Health (FIOH) as an instrument aimed at evaluating how well workers are performing in their current job and how their performance is expected to be with taking into account

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the specific psychosocial and physical work-related factors, mental and physical capabilities and health. (Tuomi et al. 1991, Ilmarinen et al. 1997).

The WAI has proved to be a predictive measure of early retirement (Ilmarinen & Tuomi 2004, Feldt et al. 2009, Sell 2009) and other related outcomes such as long-term sickness absence (Sell 2009), disability unemployment (Liira et al. 2000, Alavinia et al. 2009), mortality (Tuomi et al. 1997) and also change of employer and/or profession (Camerino et al. 2008). The majority of these previous prospective studies are commonly based on a single assessment of work ability.

However, it is also important to investigate the evolution in work ability, since work ability is a dynamic process that varies throughout an individual’s working life (Ilmarinen 2001, 2009). Until now, only a few longitudinal studies have been examining work ability and its change over time (Ilmarinen et al. 1997, Tuomi et al. 1997, Liira et al. 2000, Pohjonen & Ranta 2001, Marqueze et al. 2008, Feldt et al. 2009). Changes in work ability have mainly been investigated at group level as changes in the mean WAI score (Ilmarinen et al. 1997, Liira et al. 2000, Pohjonen & Ranta 2001, Marqueze et al. 2008). By analysing the mean scores in predefined groups, no information is gained about any atypical evolution in work ability (e.g. improvement in WAI over time) on an individual level (Feldt et al. 2009). Change in WAI on an individual level has only been investigated in relation to early retirement but has never been studied in relation to turnover intentions. However, beside examining the effect of poor WAI measured at baseline on employees’ turnover intentions 1 year later, it is particularly interesting to find out how change in WAI during a 1-year follow-up period is related to different forms of turnover intentions. Healthcare workers’ work ability can evolve over time resulting in: either an improvement in WAI; a deterioration in WAI; or a status quo of their WAI. These different types of change may have a different impact on healthcare workers’ turnover intentions and may differ according to the type of turnover intention.

Therefore, the aim of the present study was to explore the effect of WAI and its change over time on three progressive types of turnover intentions respectively: (i) intent to leave the current ward for another in the same organization (ITL ward); (ii) intent to leave the current organization (ITL organization); and (iii) intent to leave the nursing profession to start a different kind of job (ITL profession). In addition, since a positive working climate was found to be negatively associated with nurses’ turnover intention (Van der Heijden et al. 2010), we wanted to investigate if the social work environment, wherein social support and interpersonal relations are core elements, had a protective effect on the relation between WAI and ITL.

The study

Aims

The aims of this study were threefold. The first aim was to examine the relation between a single measurement of work ability and the risk of developing turnover intentions 1 year later. We hypothesized that respondents experiencing a poor WAI at baseline had an increased risk for developing a high ITL ward, high ITL organization and/or a high ITL profession (Hypothesis 1).

A second aim was to study change in WAI over 1 year. In line with previous research (Feldt et al. 2009), we hypothesized that respondents experiencing a substantial deterioration in WAI had a higher risk for developing high ITL ward, high ITL organization and/or high ITL profession in comparison with nurses whose WAI remained good or stable (Hypothesis 2).

Finally, an additional aim of this study was to assess if social support and interpersonal relations at work buffered the effect of WAI on intent to leave. We hypothesized that high social support and good interpersonal relations moderated the relation between WAI and intent to leave (Hypothesis 3).

Design

A prospective questionnaire-based design was used for data collection. The analysed data of this longitudinal study were collected during 2003–2004.

Sample

The associations between work ability and turnover intentions were assessed in the Belgian sample from the Nurses’ Early Exit Study (NEXT) (Hasselhorn et al. 2003). Belgian participating institutions at baseline were selected using a stratified sampling procedure to reflect the national distribution of nursing staff by type of institution, geographical spread and ownership.

A self-administered questionnaire assessing socio-demographic characteristics, work contents, organizational and psychosocial factors, physical and psychological health and well-being, was distributed at baseline and with a time lag of 1 year among all nursing staff (i.e. nursing aids, Registered Nurses and specialized Registered Nurses) employed in thirty seven healthcare organizations.
Measures

Work ability index
Perceived work ability was measured by means of the WAI comprising seven dimensions (Tuomi et al. 1998): (i) subjective estimation of current work ability compared with optimal life time performance; (ii) subjective work ability in relation to physical and mental demand of work; (iii) number of current diseases diagnosed by a physician; (iv) subjective estimation of working impairment due to ill health; (v) sickness absenteeism during the past year; (vi) personal prognosis of work ability in next 2 years; (vii) mental resources referring to the workers’ life in general, both at work and during leisure time. The total score is calculated by summing up all scores (Tuomi et al. 1998) and ranges from 7 to 49 points, with higher scores indicating higher perceived work ability. Based on this WAI score, the individual’s work ability can be classified into four different categories: poor (values 7–27), moderate (values 28–36), good (values 37–43) and excellent (values 44–49). In the present study participants who achieved a score below 37 were classified as having a poor WAI, participants having a score of 37 points or higher were considered to have a good WAI.

The internal validity of the WAI has been established, showing a satisfactory relationship between the subjective results of the WAI and the results of more objective measurements (i.e. medical examinations) (Eskelinen et al. 1991, Nygard et al. 1997). Furthermore, satisfactory test-retest reliability of the WAI (de Zwart et al. 2002) and other good psychometric properties (i.e. internal reliability, factor and construct validity) of the WAI have been demonstrated (Radkiewicz & Widerszal-Bazyl 2005). The Cronbach’s alpha score for the WAI was 0.68.

Social support
The degree of social support nurses received from their supervisor and their colleagues was assessed by two 4-item scales (Van der Heijden 2002, 2003). These items addressed supervisor and colleagues’ ability to appreciate the respondents’ work and to give feedback and the degree of supportive advice and help in work performance. Both measures of social support were dichotomized by means of a median split. The Cronbach’s alpha score for the social support from supervisor scale was 0.80 and for the social support from colleagues scale 0.72.

Interpersonal relations
The quality of interpersonal relations between nurses and nursing management, head nurse, colleagues, physicians and administration was assessed by five items, using a five-point scale ranging from hostile and tense to friendly and relaxed (Hasselhorn et al. 2003). The mean score of all five items was calculated to create a single interpersonal relations score. Consistent with social support, this score was dichotomized by means of a median split. Cronbach’s alpha score for the interpersonal relations scale was 0.69.

Outcome measures
All three outcome measures were measured by one question in the NEXT-study (Hasselhorn et al. 2003): ‘How often have you respectively thought during the course of the past year about’ (i) changing wards in the same organization (ITL ward); (ii) leaving the current institution (ITL organization); and (iii) giving up nursing and starting a different kind of job (ITL profession). Each item had five answer categories, ranging from never to every day. Thinking several times a month or more often about leaving was considered as a high intent to leave.

Ethical considerations
The institutional review board of the coordinating university approved the design of the European NEXT-study. All participants received a letter explaining the purposes and procedures of the study. Consent to participate was assumed by return of the questionnaire. To ensure anonymity, respondents generated a unique code identifier to enable their responses to be matched across time.

Data analysis
To assess the impact of work ability on all three outcome variables, participants reporting high intent to leave at baseline for the specific intent to leave outcome, were excluded from further subsequent analyses. For ITL ward, ITL organization and ITL profession, respectively, 1419, 1368 and 1327 healthcare workers were included. The relation between WAI and all three intent to leave indicators, measured 1 year later, was examined by two multiple logistic regression models. For the first regression model, the WAI score measured at baseline was entered in the model, using participants with a good WAI as reference category (Model 1).

For the second model, as recommended by Twisk (2003, p. 168), the % change in WAI (ΔWAI) was computed by taking into account possible ‘ceilings’ (i.e. maximum possible value) and ‘floors’ (minimal possible values) of WAI. Based on this % change, three groups were defined. Those with a ΔWAI score in an interval between −1 and +1 standard deviation of the mean ΔWAI in the study population were
defined as respondents whose WAI score did not change substantially between both measurements. When the AWAI differed more than 1 standard deviation from the mean, this meant that either the WAI score substantially improved (> +1SD) or substantially decreased (< −1SD) between both measurements. For this method, respondents whose WAI score remained relatively stable between both measurements were used as the reference category (Model 2). For both models, adjustments were made for age, gender, type of healthcare organization, education level, family situation, number of working hours and work schedule, entering all variables in a single step.

The buffering effect of social support and interpersonal relations at work on the relation between WAI at baseline and intent to leave 1 year later was investigated through logistic regression analyses. WAI and respectively social support and interpersonal relations, measured at baseline were entered as categorical variables in the model, together with their interaction term (Model 3). Results were considered statistically significant at the $P \leq 0.05$ level. Analyses were performed using SPSS 15.0 software (SPSS Inc., Chicago, IL, USA).

Results

Descriptive analysis

At baseline, a total of 4257 questionnaires, with an overall response rate of 61% were returned. One year after the baseline assessment 2857 participants filled in a second questionnaire. Here the response rate was 48%. A total of 1531 participants, who remained working in their organization during the 1-year follow-up, completed both questionnaires and were included in the prospective analysis. The mean age of the participants was 38 ± 8 years and ranged from 22–63 years. The majority (92%) of them were women. The nursing staff consisted of 73% Registered Nurses, 20% specialized nurses and 7% nursing aids. Among them, 45% worked in hospitals, 6% in nursing homes and 49% in home care settings. Half of the participants worked between 19–38 hours a week, 41% worked full-time and only a minority worked less than 19 hours a week (8%). The average seniority in the nursing profession was 15 ± 3 years.

The majority of the nursing staff members (75%) had a work experience of more than 5 years in their current organization. The mean WAI score of the healthcare workers was 40.3 (SD 4.84) with a total of 271 healthcare workers (19%), reporting a poor perceived WAI (< 37). The prevalence of high ITL ward, high ITL organization and high ITL profession at baseline was, respectively, 6%, 10% and 8%. A summary of these characteristics is presented in Table 1.

Table 1 Socio-demographic characteristics and study variables at baseline (n = 1531).

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
<th>Mean (±)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>38.4 (8.82)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 45</td>
<td>1147</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>≥ 45</td>
<td>384</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Seniority in nursing profession</td>
<td>15.3 (8.68)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 5</td>
<td>387</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>&gt; 5</td>
<td>1139</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>115</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1416</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Type of healthcare setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital</td>
<td>684</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Nursing Home</td>
<td>92</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Home Care</td>
<td>755</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Type of healthcare training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing Aid</td>
<td>108</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Registered Nurse</td>
<td>1089</td>
<td>73</td>
<td></td>
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<tr>
<td>Specialized Registered Nurse</td>
<td>294</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Family situation</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>139</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Only adult with children</td>
<td>75</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>With another adult</td>
<td>357</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>With other adult and children</td>
<td>936</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Number of working hours a week (hours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 19</td>
<td>121</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>≥ 19 and &lt; 38</td>
<td>757</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>≥ 38</td>
<td>614</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Work schedule</td>
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</tr>
<tr>
<td>Day work regular hours</td>
<td>372</td>
<td>25</td>
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</tr>
<tr>
<td>Day work others</td>
<td>268</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Only night shift</td>
<td>72</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Shift work without night</td>
<td>467</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Shift work with night</td>
<td>337</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>WAI</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>WAI score</td>
<td>40.3 (4.84)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor WAI (WAI &lt; 37)</td>
<td>271</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Good WAI (WAI ≥ 37)</td>
<td>1155</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>High ITL ward</td>
<td>95</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>High ITL organization</td>
<td>154</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>High ITL profession</td>
<td>116</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

WAI, Work Ability Index; ITL, intent to leave.

Multivariate analysis

Prospective analysis showed that a poor WAI at baseline (Model 1) was an important predictor of high ITL ward (OR 2.34; 95% CI 1.24–4.41) and high ITL organization (OR 3.25; 95% CI 1.83–5.78) 1 year later. A similar trend was observed for ITL profession although no statistically significant results were obtained.

A substantial deterioration in WAI (Model 2) was associated with more elevated risk of developing a high ITL ward.
1 year later (OR 2.16; 95% CI 1.04–4.46). In the same way, participants experiencing a substantial deterioration in WAI had more than twice the risk (OR 2.43; 95% CI 1.23–4.77) of having a high ITL organization 1 year later and had an almost three times higher chance (OR 2.93; 95% CI 1.32–6.53) of developing a high ITL profession, in comparison with healthcare workers whose work ability remained relatively stable (Table 2). A substantial improvement in WAI was associated with a reduced risk of developing high ITL organization (OR 0.56; 95% CI 0.23–1.37) and high ITL profession (OR 0.30; 95% CI 0.07–1.32) compared with the status quo reference group, although these results did not reach statistical significance.

In Model 3, it was investigated if social support at work and interpersonal relations could buffer the effect of WAI measured at baseline and intent to leave 1 year later. Our results showed that the relations between WAI and respectively ITL organization and ITL profession were not moderated by either social support or interpersonal relations. In addition, social support appeared to have no effect on the relation between WAI and ITL ward (Table 3). However, a trend for a borderline significant interaction effect (P = 0.10) was noticeable between WAI and interpersonal relations at work, both measured at baseline in relation to ITL ward (see Figure 1). Employees experiencing a poor WAI in combination with poor interpersonal relations at work had an almost three times higher risk (OR 2.82; 95% CI 1.36–5.82) of developing high ITL ward in comparison with their co-workers who had a good WAI. On the other hand, no impact of poor WAI on ITL ward was found when interpersonal relations at work were good (OR 0.86; 95% CI 0.25–2.95).

**Discussion**

In the present study, we investigated prospective relations between work ability and three progressing types of intent to leave, respectively, ITL ward, ITL organization and ITL profession, among 1531 Belgian healthcare workers. Our method of analysis differed from that of previous work ability research since both single (Model 1) and multiple measurements of work ability (Model 2) were examined in relation to these different types of intent to leave. In addition, the protective effect of social support and interpersonal relations at work in this relation was explored.

The first hypothesis stating that a poor WAI is a predictor of intent to leave was confirmed in our study. A poor WAI at

### Table 2 Multivariate associations between baseline and change (Δ) in work ability index (WAI) and intent to leave (ITL), 1 year later.

| WAI | Intent to leave the ward | | | Intent to leave the organization | | | Intent to leave the profession | | |
|-----|--------------------------|---|---|--------------------------|---|---|--------------------------|---|
|     | n (%) OR (95% CI) P | | | n (%) OR (95% CI) P | | | n (%) OR (95% CI) P | | |
| Model 1: Baseline WAI | | | | | | | | |
| Good WAI | 1088 (82) 1 | | | 1050 (83) 1 | | | 1026 (83) 1 | | |
| Poor WAI | 236 (18) 2.34 (1.24–4.41) 0.009 | | | 223 (17) 3.25 (1.83–5.78) <0.001 | | | 216 (17) 1.93 (0.88–4.23) 0.099 | | |
| Model 2: ΔWAI | | | | | | | | |
| mean ± 1SD | 907 (71) 1 | | | 896 (71) 1 | | | 853 (71) 1 | | |
| > +1SD | 233 (18) 1.23 (0.59–2.57) 0.576 | | | 224 (18) 0.56 (0.23–1.37) 0.205 | | | 215 (18) 0.30 (0.07–1.32) 0.112 | | |
| < −1SD | 135 (11) 2.16 (1.04–4.46) 0.038 | | | 128 (11) 2.43 (1.23–4.77) 0.010 | | | 128 (11) 2.93 (1.32–6.53) 0.009 | | |

For ITL ward, ITL organization and ITL profession, respectively, 1419, 1368 and 1327 healthcare workers were included in the analyses after excluding the respondents who had a high ITL at baseline.

Model 1 and 2: adjusted for age, gender, education level, family situation, shift work, number of working hours and type of healthcare organization.

### Table 3 Effect of interpersonal relations at baseline on the relations between the work ability (WAI) at baseline and intent to leave (ITL), one year later.

| Model 3 | Intent to leave the ward | | | Intent to leave the organization | | | Intent to leave the profession | | |
|---------|--------------------------|---|---|--------------------------|---|---|--------------------------|---|
|         | OR (95% CI) P | | | OR (95% CI) P | | | OR (95% CI) P | | |
| WAI     | 2.82 (1.36–5.82) 0.005 | | | 2.48 (1.25–4.93) 0.010 | | | 2.98 (1.11–7.99) 0.030 | | |
| Interpersonal relations | 1.21 (0.65–2.26) 0.555 | | | 0.72 (0.38–1.36) 0.311 | | | 1.94 (0.88–4.27) 0.102 | | |
| WAI × Interpersonal relations | 0.31 (0.07–1.28) 0.105 | | | 1.44 (0.48–4.33) 0.513 | | | 0.41 (0.08–2.01) 0.270 | | |

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baseline elevated the risk of developing high ITL ward, high ITL organization and partly high ITL profession. These findings were in line with the results obtained by Camerino et al. (2008), who found that poor perceived work ability at baseline was associated with a higher intent to leave the current job both inside and outside the organization and with a stronger intent to leave the nursing profession among younger Italian nurses up to the age of 45 years.

In contrast to the study by Camerino et al. (2008), we also investigated change in WAI. A substantial deterioration in WAI was found to be an important predictor of all three intent to leave indicators, in line with our second hypothesis. Although the results did not reach statistical significance, healthcare workers who reported a substantial improvement in WAI appeared to have a lower risk of having a high ITL organization and a high ITL profession 1 year later, compared with co-workers whose WAI remained relatively stable during the follow-up period.

It appears that a single time-point measurement of WAI is an effective and easier way to predict healthcare workers’ future ITL ward and ITL organization than measuring change in WAI but it does not allow to predict the risk of high ITL profession 1 year later. This latter prediction requires repeated measurement of WAI. The added value of measuring change in WAI is that this allows on the one hand predicting healthcare workers’ future risk of developing high ITL profession, which may be particularly the concern of healthcare in general given the attempts to stimulate sustained participation in the nurses’ labour market. On the other hand, because work ability may change over time, repeated measurements of WAI also enable the management of healthcare organizations to identify and subsequently further monitor nursing staff members who are at risk of developing high internal and organizational turnover intentions during their career.

Furthermore, no impact of poor WAI on ITL ward was found when the interpersonal relations in the ward were good, which partly confirmed our last hypothesis. It is remarkable that, although healthcare workers perceived their work ability to be low, good interpersonal relations seemed to prevent them from considering leaving the current ward. This could be attributed to the fact that a positive work climate, positively influences employees’ professional growth and career development (Van der Heijden 2002, 2003), which might prevent them from developing high ITL ward because they find enough challenges in their current ward. In contrast to this less severe type of turnover intention, good interpersonal relations could not buffer the adverse effect of poor WAI on the more progressive forms of intent to leave such as organizational and professional turnover intentions. A good understanding between nurses and nursing management, head nurse, colleagues, physicians and administration seems to be especially important in the context of a ward but might be less relevant to influence nurses’ willingness to remain in their current organization or profession. Simon et al. (2010) found in the German sample of the NEXT-study, that the intention to leave the organization was strongly associated with organizational leadership and the local context, whereas intent to leave the profession was strongly related with personal factors and work-home conflict. This might explain why we also did not find a moderating effect of social support by superior and co-workers on the relations between poor WAI and respectively ITL organization and ITL profession. However, unlike good interpersonal relations, no interaction effect was found between social support and WAI for ITL ward. It might be that nurses’ judgment of the quality of their interpersonal relations at work reflects not only an emotional or relational evaluation but rather an instrumental or functional appraisal of their work relations. One can also argue that not all interpersonal relations at work are social supportive.

Although only one interaction effect between interpersonal relations and WAI was found for ITL ward in our study, the importance of the social work environment in the prevention of turnover intentions should not be neglected. As suggested by Estryn-Behar et al. (2010), in their study on nurses’ turnover, the management of healthcare organizations should stimulate a positive working climate at team and organizational level to
What is already known about this topic

- A poor work ability measured at baseline is found to be a predictor of high turnover intentions among nurses.
- Turnover intentions are antecedents of actual turnover.
- Change in work ability has not been investigated in relation to nurses’ turnover intentions.

What this paper adds

- A substantial change in work ability is found to be associated with three progressive forms of turnover intentions.
- Poor work ability has no detrimental effect on the intention to leave the ward when nurses experience good interpersonal relations at work.
- The adverse relation between poor work ability and turnover intentions is not buffered by high social support from colleagues and superiors.

Implications for practice and/or policy

- Maintaining good work ability and improving poor work ability are increasingly important to retain nurses in their healthcare organization and in the nursing profession.
- Influencing the organizational climate by improving good interpersonal relations can be an additional way to reduce internal turnover intentions when nurses perceive poor work ability.

Limitations

The limitations of the present study need to be acknowledged. A notable limitation is that sample attrition may have affected our results. From the initial 4257 participants, only 1531 of them were involved in both measurements. A comparison between respondents and non-respondents suggested a healthy worker effect. Those who did not return the second questionnaire, were those who suffered from more adverse working conditions at baseline (i.e. lower WAI). Consequently, our findings may be underestimated due to this sample bias.

Another possible weakness is the use of self-reported measures for both the predictor and dependent variables, through which a common-method bias might have played a role. Nevertheless, Spector (2006) stated that these influences are not as high as could be expected. In addition, it has been suggested that the use of self-report measures for both exposure and outcome variables is less problematic when there is a prospective design (Tennant 2001, Theorell & Hasselhorn 2005). Finally, also the fact that change in WAI was measured over a relative short time period (1 year) might be a possible limitation, nevertheless an adverse evolution in work ability during the 1-year follow-up was found to be significantly predictive for all three forms of intent to leave.

Conclusion

The results of this study indicate, mainly in line with our hypotheses, that on the one hand a poor baseline WAI is a predictor of internal and organizational turnover intentions and, on the other hand, a deterioration in WAI is predictive than focussing on individual and lifestyle factors (van den Berg et al. 2008, Feldt et al. 2009, Ilmarinen 2009).

Since ITL ward may be considered as a predictor of external turnover intentions (Krausz et al. 1995, Morrell 2005) and given our results suggesting that the risk of developing high ITL ward due to poor WAI was buffered by good interpersonal relations at work, an additional way to reduce nurses’ turnover intentions, besides influencing work ability, might be improving the social work environment by stimulating good interpersonal relations. Interpersonal relationships at work may be improved by better interpersonal communication with physicians, co-workers, the head nurse, the nursing management and the administration. Timely and adequate communication contribute to team effectiveness and quality of care, which in turn has shown to affect job satisfaction and subsequently turnover (Stordeur & D’Hoore 2007).
for all three progressive forms of turnover intentions among nurses and nursing aids. Our study extends the existing work ability literature with additional support for the relation between change in WAI and intent to leave. These findings have implications for healthcare organizations and healthcare in general. Management of healthcare organizations and policymakers should pay more attention to the importance of a good work ability of healthcare workers to counter the development of high internal, organizational and occupational turnover intentions, which could be considered as antecedents of actual turnover. At the organizational level, healthcare organizations need to be encouraged to develop strategies enabling them to take measures to sustain and/or to improve the work ability of their nursing staff. One possible way may be influencing employees’ competences, values, attitudes and motivation given that work ability is not only determined by health and functional capacity. At the ward level, stimulating good interpersonal relations at work in case of poor work ability could be an additional way to reduce the intention to leave the current ward in the same organization. At the occupational level, it is necessary to follow-up change in WAI over time to be able to take preventive measures for those healthcare workers who are at risk of developing occupational turnover intentions. This is especially important given that a high ITL profession has the severest impact on the nursing profession and on healthcare in general.

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**Conflict of interest**

No conflict of interest has been declared by the authors.

**Author contributions**

HD, EC, HMH and LB were responsible for the study conception and design. WD, HMH and LB performed the data collection. HD performed the data analysis and was responsible for the drafting of the manuscript. EC, PV, HMH and LB made critical revisions to the paper for important intellectual content. EC provided statistical expertise. PV, WD, HMH and LB obtained funding. PV and LB provided administrative, technical or material support and supervised the study.

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