

The Impact of Social Work Environment, Teamwork Characteristics, Burnout, and Personal Factors Upon Intent to Leave Among European Nurses

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Objectives: Europe's nursing shortage calls for more effective ways to recruit and retain nurses. This contribution aims to clarify whether and how social work environment, teamwork characteristics, burnout, and personal factors are associated with nurses' intent to leave (ITL).

Methods: Our sample comprises 28,561 hospital-based nurses from 10 European countries. Different occupational levels have been taken into account: qualified registered nurses (n = 18,594), specialized nurses (n = 3957), head nurses (n = 3256), and nursing aides and ancillary staff (n = 2754).

Results: Our outcomes indicate that ITL is quite prevalent across Europe, although we have found some differences across the countries depending on working conditions and economic situation. Quality of teamwork, interpersonal relationships, career development possibilities, uncertainty regarding treatment, and influence at work are associated with nurses' decision to leave the profession across Europe, notwithstanding some country-specific outcomes. A serious lack of quality of teamwork seems to be associated with a 5-fold risk of ITL in 7 countries. As far as personal factors are concerned, our data support the hypothesized importance of work-family conflicts, satisfaction with pay, and burnout. A high burnout score seems to be associated with 3 times the risk of ITL in 5 countries.

Conclusions: To prevent premature leaving, it is important to expand nurses' expertise, to improve working processes through

collaboration and multidisciplinary teamwork, and to develop team training approaches and ward design facilitating teamwork.

Key Words: teamwork, burnout, nursing, premature departure, cross-cultural approach

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Throughout Europe, healthcare institutions encounter difficulties recruiting and retaining highly qualified nurses with adequate specialization.^{1,2} It is widely acknowledged that since the mid 1980s, restructuring and cost reduction initiatives have resulted in a decrease in patient length of stay.³ At the same time, patient acuity has risen, and the nursing profession has become more technical and complex.^{4,5} Consequently, working conditions have generated a great deal of dissatisfaction.^{1,6}

A large number of studies have shown how quality of teamwork is associated with increased nurses' job satisfaction,^{7–9} quality of care,^{10,11} and reduced burnout.¹² Moreover, improved team communication and decision sharing are associated with decreased overtime and emotional distress, and ultimately prematurely leaving the job.¹³ Constructive relationships between nurses and physicians, more control over practice, and autonomy are associated with attracting and retaining qualified nurses, as suggested by the Magnet hospital program.^{14–17}

Despite this body of knowledge, cost reduction initiatives in hospitals and reorganization have related that a lack of nurses has led to managers using floating assignments and reducing the time available for in-depth discussions. As a consequence, hostile feelings may develop between occupational groups and there may be poor circulation of information, with possible consequences for patients' safety, healthcare quality, and career development opportunities for nurses. Literature also suggests that nurses' dissatisfaction with forced floating to unfamiliar units is associated with higher turnover rate.¹⁸

Although there is some legislation in European countries, such as the "Plan Hospital 2007" in France, promoting floating assignments among nurses across departments,

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there is a lack of research into its effects. In the United States, there is a debate about the efficiency of floating assignments.¹⁹ Our study is part of the NEXT research project (www.next.uni-wuppertal.de), conducted in 10 European countries, giving us an opportunity to study the quality of teamwork in healthcare across the countries and to investigate its impact upon intent to leave (ITL). Moreover, we will address work environment factors, such as floating assignments, career development opportunities, influence at work; and personal factors, such as age, gender, and burnout to better understand how these are related to the shortage of nurses.

METHODS

Study Design and Sample

Our study investigated nurses working in hospitals in Belgium, Finland, France, Germany, Italy, Netherlands, Norway, Poland, Slovakia, and the United Kingdom. Because preliminary analyses indicated that different work settings are quite heterogeneous with respect to predictors included in this analysis, we restrict our sample to hospital-based nurses.

To select the participating institutions, we used a stratified sample of healthcare institutions, based on the following criteria: (1) representation of regions in each country; and (2) representation of both private and public institutions. To participate, both employers and representatives of employees had to agree. In each institution, a "field" manager was identified who organized the assessments locally and who kept in close contact with the national NEXT team throughout the conduct of the study. In the end, 185 hospitals and private clinics were included in our sample ($N = 28,561$ nurses). Across participating institutions, our sample comprised different occupational groups: qualified registered nurses ($n = 18,594$), specialized nurses ($n = 3,957$), head nurses ($n = 3,256$), and nursing aides and ancillary staff ($n = 2,754$).

Head nurses either answered that their position at work was sister/charge nurse or deputy sister/deputy charge nurse. Midwives or psychologists were included in this group as well. Among head nurses and other similar healthcare workers, 47.2% had had at least 4 years of nursing education. Head nurses remain partly involved in direct care in most countries, except in France and Italy. Among specialized nurses, 67.6% had taken at least 4 years of nursing education; compared with 38.8% for registered nurses who mainly followed at least 3 years of education (52%). Nursing aides or less-qualified healthcare workers mainly had taken 1 year of nursing education (59.2%), followed by 9.5% for 2 years, and 15% for less than 1 year.

A more elaborate outline of the study design, sample characteristics, and findings are described in Refs. 20 and 21.

The Questionnaire

The questionnaire for the NEXT research project was developed by a group of experts (medical doctors, nurses, psychologists, and statisticians) drawing on previous research, interviews with nursing staff in 3 countries, and 3 pilot studies. The translation-back translation was used by all

country members using the base English version.²² The survey contained about 260 questions²⁰ comprising occupational biography, private life, social work environment, work organization, work demands, individual resources, and future occupational plans. It was carried out between October 2002 and June 2003, and in most instances, surveys were mailed by the institutions themselves to avoid violating employee privacy rights. Completed questionnaires were returned to the national research institutions by means of a prepaid envelope.

Measures

Dependent Variable

Intent to leave was measured by 1 item: "How often during the course of the past year have you thought about giving up nursing?" The scale anchors are: "never," "sometime in a year," "sometime in a month," "sometime in a week," and "every day." We have interpreted "sometime in a month" or more often as an indicator of frequently considering intent to leave (15.6% of the total sample).

Predictor Variables

For clarity, we describe the scales in Table 1. We created tertiles for each scale to allow comparisons across countries for different prevalence categories for the specific variables.

Confounding Factors

To control for confounders, we included personal factors such as age (3 age categories), seniority (4 classes), gender, and family situation. We also considered organizational factors such as existence of free nursing positions, working in a fixed department versus moving, and occupational level.

Statistical Analysis

First, we conducted bivariate analyses, using Pearson's χ^2 test, to determine the association of predictors with ITL. Second, we conducted multivariate analysis using SPSS 12.0 separately for each of the 10 countries. Overall, less than 12% of the different questions contained missing data. For some variables, missing values comprised several items, explaining the difference in sample sizes.

RESULTS

Intent to Leave Nursing by Country

Among participating nurses in Italy, Finland, France, Germany, and the United Kingdom, ITL was higher than 15%. It seemed to be much lower in the other countries, and it was as low as 10.4% in the Netherlands (Table 2). Previous research²⁰ has indicated that nurses in Belgium, Norway, and the Netherlands have better working conditions compared with the 5 mentioned above. This is especially true compared with Poland and Slovakia, where working conditions are frequently bad, but the economic situation does not offer opportunities to think of leaving the profession. Indeed, we found that 91.5% of Polish and 82.1% of Slovakian nurses are worried about difficulty finding another job if they became unemployed, as opposed to less than 35% in all the

TABLE 1. Outline of the Predictor Variables

Predictors	Source	Items	Response Format	Psychometrics
Burnout	Personal Burnout Scale of the Copenhagen Burnout Inventory (CBI) ²³	How often... Do you feel tired? Are you physically exhausted? Are you emotionally exhausted? Do you think: "I can't take it anymore"? Do you feel worn out? Do you feel weak and susceptible to illness?	5-point scale: (1) never/ almost never, (5) (almost) every day	Six items' mean score, 1 missing item allowed. Cronbach's alpha between 0.86 and 0.91 in the participating countries
Work-family conflict	Work-family conflict scale (WFC) ²⁴	The demands of work interfere with my home and family life The amount of time my job takes makes it difficult to fulfill family responsibilities Things I want to do at home do not get done because of the demands of my job My job produces strain that makes it difficult to fulfill family duties Due to work-related duties, I have to make changes to my plans for family activities	5-point scale: (1) complete agreement, (5) total disagreement	Five items' mean score, 1 missing item allowed. Cronbach's alpha between 0.85 and 0.90 in the participating countries
Satisfaction with pay scale	NEXT Study Group ²⁵	How satisfied are you with your pay... In relation to your need for income? Considering the pay of other comparable professions? Considering the pay of nurses in other institutions?	5-point scale: (1) not at all, (5) very much	Three items' mean score, 1 item allowed. Cronbach's alpha between 0.70 and 0.84 in the participating countries
Quality of teamwork	Job satisfaction scale COPSQ. ²⁶ NEXT Study Group	<i>Satisfaction with teamwork:</i> How pleased are you with...? Your work prospects? Your opportunities to give your patients the care they need? Psychological support at your workplace? The way your abilities are used? <i>Quality of communication within team:</i> How often do you have to perform tasks for which you are not qualified enough? How often do you receive information, which is relevant to your work, insufficiently or too late? How often do you receive conflicting/contradictory orders concerning the performance of your work? In your department, are there opportunities to discuss professional matters which you think are important?"	Four point scale: (1) very unsatisfied (5) highly satisfied Five-point scale: (1) never, (5) constantly Five categories: (1) no, (5) in detail	Cronbach's alpha 0.78 including the 8 items. Could not be calculated in the United Kingdom Satisfaction with teamwork was used for the United Kingdom.
Interpersonal relations	NEXT Study Group	How are the relations between the nurses and the following groups? Nursing management Colleagues Doctors	Five point scale ranging from (1) hostile and tense to (5) friendly and relaxed	Three items' mean score, 1 missing allowed. Cronbach's alpha between 0.87 and 0.92 in the participating countries.

(Continued)

TABLE 1. (Continued)

Predictors	Source	Items	Response Format	Psychometrics
Possibilities for development	Copenhagen Psychosocial Questionnaire COPSOQ ²⁶	Does your work require you to take the initiative? Do you have the possibility of learning new things through your work? Can you use your skills or expertise in your work? Is your work varied?	Five point scale: (1) to a very small extent (5) to a large extent	Four items' mean score, 1 missing item allowed. Cronbach's alpha between 0.72 and 0.79 in the participating countries.
Uncertainty regarding treatment	Gray-Toft;Anderson and Basteyns ²⁷	Inadequate information from a doctor regarding the medical condition of a patient. A doctor ordering what appears to be inappropriate treatment for a patient. A doctor not being present in a medical emergency. Not knowing what a patient or a patient's family ought to be told about the patient's medical condition and its treatment. Uncertainty regarding the operation and functioning of specialized equipment.	Four-point scale: (1) never to (5) very frequently	Cronbach's alpha 0.72.
Influence at work	Modified Swedish version of the Demand-Control questionnaire, ²⁸	How often are you personally occupied with the following tasks? I have a say in what type of task I am asked to fulfil I can decide for myself how to fulfil the tasks given to me I can set my own work pace I have a say in when I fulfil the tasks given to me Extent to which a nurses has autonomy in decision making at work	Four point scale: (1) "totally inaccurate" (2) "totally accurate"	Four items' mean score, 1 missing allowed. Cronbach's alpha between 0.71 and 0.84 in the participating countries

other countries, and even less than 16% for Norway and the Netherlands. To take these differences into account, in Table 2 we differentiate 3 groups: (1) nurses with the lowest ITL in 3 of the 10 countries, (2) nurses with the highest ITL in 5 countries, and (3) Polish and Slovakian nurses.

Perception of Social Work Environment, Teamwork Characteristics, and Intent to Leave Nursing by Country

A low score for quality of teamwork was associated with a 5-fold increased ITL (27.9% for low quality score vs. 11.7% for medium, and 5.4% for high quality score; $P < 0.001$). Across countries, a low score for quality of teamwork was associated with at least a 4-fold increased ITL. Quality of teamwork was relatively low in Italy, Germany, Slovakia, Poland, and France (respectively 52.6%, 44.1%, 41.1%, 40.9%, and 37.2%), whereas outcomes were relatively more positive with less frequent low quality of teamwork reported in Belgium (25.7%), Finland (22.1%), The Netherlands (12.3%), and Norway (6.4%).

Other characteristics of team functioning seem to be associated with a 2-fold increase in ITL. These include possibilities for career development (21.9% for low and 12.9% for high), quality of interpersonal relations (23.3% for

low and 10.7% for high), uncertainty regarding treatment (22.2% for low and 12.5% for high), and influence at work (22.1% for low and 12.4% for high). For all these variables, more nurses perceived poor conditions in the higher ITL groups, compared with the lowest.

Sound team building also requires a certain amount of stability within the team. We found that not working in a fixed department was also linked with more ITL (19.7% vs. 10%). Floating nursing assignments hinders team building and is associated with ITL (21.3% vs. 14.4%). Nurses from the United Kingdom more frequently reported that they had floating nursing assignments (60.8%).

Personal Factors and Intent to Leave Nursing According to Country

Specialized nurses reported the highest ITL (18.3%), followed by head nurses and other highly qualified healthcare workers (18%). Nursing aides reported the lowest ITL (13.2%), whereas registered nurses were in an intermediate position (16.4%) ($P < 0.001$). Nurses between 30 and 44 years of age and with 6–14 years of seniority reported the highest ITL. Male nurses and nurses living alone without a child also reported a higher ITL (Table 3).

A high work–family conflict score is associated with a 2-fold increased risk of ITL (22.1% for high conflict vs.

TABLE 2. Perception of Social Work Environment, Teamwork Characteristics, and Intent to Leave Nursing According to Country

	Group 1												Group 2												Group 3											
	The Netherlands			Norway			Belgium			France			Finland			Germany			Italy			United Kingdom			Poland			Slovakia			Total					
	N	ITL	% With Frequent	N	ITL	% With Frequent	N	ITL	% With Frequent	N	ITL	% With Frequent	N	ITL	% With Frequent	N	ITL	% With Frequent	N	ITL	% With Frequent	N	ITL	% With Frequent	N	ITL	% With Frequent	N	ITL	% With Frequent						
Total sample	2362	10.4	2220	11.9	2162	12.7	4222	15.4	2641	15.6	2362	19.1	4446	20.6	2107	35.6	2799	11.1	2255	12.5	27576	16.5														
Score of quality of teamwork																																				
High	1243	4.9	1410	6.4	798	4.9	1208	5.6	1007	6.2	521	4.2	768	6.9	848	15.8	644	2.5	530	4.5	8129	5.4														
Medium	783	11.4	499	16.4	735	11.6	1302	10.7	985	13.2	719	12.1	1173	13.9	748	37.7	880	7.7	655	8.9	7731	11.7														
Low	295	31.2	143	51.7	539	26.2	1506	27.2	566	36.2	1026	31.5	2166	29.8	496	66.3	1087	19.9	870	20.5	8198	27.9														
Score of possibilities for development																																				
High	311	8.7	1268	7.7	467	10.9	1422	10.6	824	10.0	728	12.8	513	16.8	1040	31.1	535	8.8	694	7.1	7802	12.9														
Medium	1291	9.0	746	14.7	962	10.7	1678	15.0	1097	14.5	1050	16.5	1412	15.0	737	37.9	1030	9.4	821	11.4	10,824	14.7														
Low	754	13.5	199	28.6	723	16.5	1114	22.2	712	23.9	576	31.3	2486	24.7	327	45.0	1210	13.7	717	18.5	8818	21.9														
Score of quality of interpersonal relations																																				
High	733	7.1	1114	9.2	617	7.9	679	7.2	551	7.3	658	11.6	659	12.4	895	25.6	561	5.2	737	8.3	7204	10.7														
Medium	996	8.7	301	16.9	750	10.4	1387	11.5	990	13.5	822	16.3	1106	16.1	646	38.2	805	8.0	627	12.9	8430	14.4														
Low	526	18.4	101	24.8	625	20.0	1839	20.9	1022	22.7	735	29.5	2265	25.5	472	52.8	1278	15.6	670	17.5	9533	23.3														
Score of uncertainty regarding treatment																																				
Low	606	9.9	708	9.0	397	10.6	953	10.4	505	12.9	301	10.6	1051	14.7	650	28.9	547	6.0	775	9.4	6493	12.5														
Medium	1119	8.4	929	10.8	688	10.0	1202	13.9	1066	12.8	725	14.5	1264	19.1	644	34.5	753	9.2	664	11.0	9054	14.1														
High	572	14.9	351	22.2	941	15.6	1384	20.4	827	21.6	1159	24.8	1806	25.7	566	47.9	1286	14.6	522	20.5	9414	22.2														
Score of influence at work																																				
High	973	8.0	1280	9.5	681	7.8	1725	12.3	475	9.9	815	13.4	1641	14.3	890	28.2	743	7.0	531	9.6	9754	12.4														
Medium	857	10.2	562	15.5	766	12.0	1342	14.8	834	11.6	818	18.1	1290	19.5	630	34.4	859	10.5	614	12.9	8572	15.7														
Low	528	15.2	360	15.3	694	18.3	1131	21.1	1318	20.2	711	26.9	1469	28.7	568	48.9	1146	14.3	986	14.5	8911	22.1														
Fixed department																																				
Yes	2144	10.2	1689	12.2	1938	12.3	3592	15.1	2175	14.7	1826	18.1	3892	19.6	1753	34.3	2086	10.8	1911	11.8	23,006	16.0														
No	213	12.2	464	11.0	219	16.4	608	17.6	455	19.8	525	22.5	528	28.2	346	42.2	649	11.4	337	16.9	4344	19.7														
Vacant nursing assignments																																				
No or is not specified	1138	8.2			1578	12.2	2539	13.6	2184	15.1	1423	16.0	2120	18.7	807	31.4	2007	9.2	2114	12.3	15,910	14.4														
Yes	1224	12.5			584	13.9	1683	18.2	418	18.7	939	23.6	2326	22.4	1300	38.3	792	16.0	141	15.6	9407	21.3														

Due to missing values the total numbers are somewhat different. For United Kingdom, only satisfaction with teamwork could be computed, the total does not include United Kingdom.² Tertiles of quality of teamwork: High: 3.70–5.00; Medium: 3.185–3.69; Low: 1.00–3.184. Tertiles of possibilities for development: High: 4.26–5.00; Medium: 3.68–4.25; Low: 1.00–3.67.³ Tertiles of quality of interpersonal relations: High: 3.81–5.00; Medium: 3.21–3.80; Low: 1.00–3.20.³ Tertiles of uncertainty regarding treatment: low: 1.00–1.83; Medium: 1.84–2.80; High: 2.81–5.00. For comparison between countries $P < 0.001$ for all, except high quality of teamwork $P < 0.01$.

TABLE 3. Personal characteristics, and Intent to Leave Nursing According to Country

Occupation category	Group 1												Group 2												Group 3												Total	
	The Netherlands			Norway			Belgium			France			Finland			Germany			Italy			United Kingdom			Poland			Slovakia			% With Frequent ITL	% With Frequent ITL						
	N	% Frequent ITL	% With Frequent ITL	N	% Frequent ITL	% With Frequent ITL	N	% Frequent ITL	% With Frequent ITL	N	% Frequent ITL	% With Frequent ITL	N	% Frequent ITL	% With Frequent ITL	N	% Frequent ITL	% With Frequent ITL	N	% Frequent ITL	% With Frequent ITL	N	% Frequent ITL	% With Frequent ITL	N	% Frequent ITL	% With Frequent ITL	N	% Frequent ITL	% With Frequent ITL								
Registered nurses	1508	9.8	1561	14.0	1079	12.6	2092	16.2	732	16.8	1478	20.8	3745	20.2	693	37.1	2509	11.4	1522	13.0	16919	16.4																
Head nurses			238	10.5	253	11.5	291	15.8	254	7.9	435	14.3	391	22.5	539	37.8	283	8.8	211	10.9	2895	18.0																
Specialized nurses	794	12.0	547	14.3	261	17.2	844	18.2	351	17.4	265	21.5	513	34.7	513	34.7	136	8.8	6	3711	18.3																	
Nursing aids	49	6.1	421	5.2	215	8.8	1316	13.8	81	16.0	47	6.4	220	30.9	220	30.9	1			2356	13.2																	
Age, yr																																						
<30	539	8.5	695	14.7	491	11.2	716	12.0	309	22.3	528	26.7	457	21.9	371	35.3	379	16.6	371	18.6	4856	17.8																
30-44	1175	12.6	800	13.3	1066	14.3	2009	15.6	1048	19.2	1248	20.1	2967	22.4	1054	38.0	1844	10.7	1205	13.0	14416	18.0																
45+	52	8.1	57	7.9	62	10.6	250	17.0	134	10.7	57	9.9	143	14.7	216	32.0	43	7.8	48	7.8	1062	13.2																
Seniority																																						
<5 yr	467	8.8	570	16.0	419	11.7	784	10.5	392	19.1	416	26.2	375	18.7	380	33.7	198	14.1	112	17.9	4113	16.8																
6-14 yr	849	11.0	697	13.6	689	14.5	1322	15.4	777	19.2	927	21.5	2296	23.0	674	39.0	841	13.0	698	15.5	9770	18.9																
15-24 yr	687	11.6	539	9.5	686	12.1	1216	16.3	825	15.3	690	15.8	1196	20.5	641	36.5	1301	10.1	825	12.6	8606	15.8																
>24 yr	347	8.4	414	6.8	356	11.8	877	18.7	623	9.1	310	8.7	550	12.7	314	33.1	436	9.2	583	7.4	4810	12.6																
Gender																																						
Female	2048	9.8	2033	11.4	1872	12.3	3712	15.4	2484	15.1	1910	18.3	3221	20.8	1963	35.5	2762	11.2	2200	12.2	24205	16.1																
Male	310	14.5	180	17.8	278	14.7	505	16.0	150	22.7	448	22.1	1209	20.3	140	37.9	32	9.4	51	23.5	3303	19.5																
Personal situation																																						
With adult	753	9.4	636	11.8	534	14.4	972	14.2	820	14.8	749	19.9	1156	23.8	787	32.1	498	13.5	436	15.1	7341	17.6																
Alone	340	12.4	413	15.3	317	13.6	638	16.5	384	17.2	575	26.3	561	23.9	240	38.3	140	16.4	142	12.0	3750	19.6																
Alone with child	52	5.8	131	13.7	129	12.4	369	16.0	211	18.5	152	16.4	176	16.5	138	39.9	178	11.8	166	9.0	1702	16.5																
With adult and child	1209	10.7	1018	10.2	1156	11.8	2211	15.6	1198	15.4	867	13.8	2377	18.6	930	37.1	1946	10.1	1470	12.2	14382	15.2																
Score of work conflicting family																																						
Low	1326	6.3	1200	7.9	516	7.4	1259	7.9	1021	9.3	786	10.3	788	13.6			1361	7.4	461	18.0	8718	9.0																
Medium	796	12.8	646	15.0	785	10.3	1447	15.5	805	14.7	826	17.7	1490	17.0			871	12.1	706	13.7	8372	14.6																
High	227	26.0	299	21.7	834	18.3	1462	21.8	773	25.4	717	30.7	2015	26.3			500	19.8	1008	9.5	7835	22.1																
Work week duration																																						
>35 h	706	9.6	1123	13.2	1205	13.1	3208	15.3	2135	14.8	1471	18.6	3759	20.2	1207	36.1	2725	11.0	1660	12.1	19199	16.4																
<35 h	1630	10.7	1097	10.7	864	12.3	606	16.0	320	19.4	777	19.3	338	21.6	900	35.0	38	13.2	254	13.0	6824	16.6																
Score of satisfaction with pay																																						
High	1258	9.1	872	10.0	1006	8.3	2452	12.5	500	10.2	1181	15.7	1060	14.5	806	27.3	339	6.8	468	7.7	9942	12.7																
Medium	717	10.2	618	10.4	604	14.2	861	18.4	728	12.8	704	22.6	1112	18.7	571	36.1	569	6.2	427	10.1	6911	16.3																
Low	341	15.2	622	15.9	432	21.8	737	21.6	1315	19.1	354	23.4	1947	25.3	681	44.9	1806	13.6	1241	15.7	9476	20.9																
Burnout score (CBI)																																						
Low	1737	7.1	1389	6.6	356	2.5	349	4.3	909	8.6	701	7.7	1561	10.4	541	19.8	708	4.8	321	7.5	8572	8.1																
Medium	477	17.4	534	16.5	738	7.6	1524	8.9	1041	13.6	888	16.4	1361	19.4	751	30.4	999	8.4	794	9.4	9107	14.3																
High	135	28.9	246	33.3	1045	20.0	2326	21.5	664	28.6	753	32.8	1366	33.7	794	51.3	1000	18.3	1057	16.7	9386	26.6																
No	2145	9.0	1750	10.5	1658	8.8	3020	11.7	2225	14.2	1735	15.2	3496	17.6	1709	31.1	1825	8.5	1741	11.6	21304	13.9																
Mental disorders																																						
Yes (own diagnosis)	103	28.2	230	19.1	333	25.8	620	26.3	253	25.3	377	31.6	762	29.8	191	57.1	547	19.4	254	19.3	3670	27.1																
Yes (physician diagnosis)	93	23.7	101	22.8	171	24.6	378	26.7	83	24.1	150	32.7	188	38.8	158	53.8	70	14.3	31	12.9	1423	30.1																
Musculoskeletal disorders																																						
No	1468	9.7	1178	11.0	1018	9.7	1819	11.8	1342	14.4	901	14.8	1762	17.5	1257	31.2	1022	8.6	849	12.1	12616	14.3																
Yes (own diagnosis)	346	10.1	447	13.0	435	14.3	1238	17.0	582	15.8	544	20.4	1243	22.4	371	42.0	821	13.4	707	12.3	6734	17.8																
Yes (physicians diagnosis)	527	12.3	464	15.3	709	15.9	1052	20.0	600	17.8	849	22.5	1441	22.8	421	41.8	702	11.8	557	12.7	7322	19.3																

Because of missing values, the total numbers are somewhat different. For comparison between countries $P < 0.001$ for all. Tertiles of satisfaction with pay; High: 2.34-5.00; Medium: 1.68-2.33; Low: 1.00-1.67. Tertiles of work conflicting family; low: 1.00-2.20; Medium: 2.21-3.20; High: 3.21-5.00. For the United Kingdom the score of work conflicting family could not be computed. Tertiles of burnout; low: 1.00-1.83; Medium: 1.84-2.80; High: 2.81-5.00.

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14.6% for medium, and 9% for low conflict score; $P < 0.001$). This risk factor is less prevalent among nurses from group 1 (except for Belgium) and for Polish nurses.

Low satisfaction with pay is also an important factor, more so in Belgium. In the total sample, 20.9% nurses reported low satisfaction with pay versus 12.7% who reported high satisfaction, whereas for Belgium, they reported 21.8% versus 8.3%. ITL does not differ appreciably with differences in work week duration.

Burnout seems to be strongly linked with ITL; 26.6% of nurses with a high burnout score reported frequently considering leaving, whereas 14.3% of the ones with medium burnout scores and 8.1% of the ones with low burnout scores did so. This outcome varied by country. A relatively high prevalence of burnout (more than one-third of the sample in the highest tertile and even more in France, Belgium, and Slovakia) was observed in 8 countries, whereas it was infrequent in group 1 (5.6% in the Netherlands and 10.6% in Norway).

Because the Copenhagen burnout scale includes both physical and emotional exhaustion, we could investigate differences in the association with ITL depending on the type of disorders (musculoskeletal vs. mental disorders). Our results clearly indicated that mental disorders had the highest influence on ITL (30.1% vs. 13.9% for nurses with no mental disorders, compared with 19.3% for musculoskeletal disorders vs. 14.3% for nurses without the latter).

Convergence of Risk Factors According to Country Category

Our results suggest that for nurses in group 1, their work life is characterized by a constellation that can be summarized as follows: high-quality teamwork, high or medium quality of interpersonal relations, high or medium influence at work, rare floating assignments (except in Norway), and infrequent high burnout scores. Conversely, nurses in countries belonging to group 2 can be characterized by low quality of teamwork, low or medium quality of interpersonal relations, low or medium influence at work, more frequent floating assignments (except in Italy), and frequent high burnout scores. Nurses in Poland and Slovakia (group 3) often reported bad working conditions and high burnout scores, despite a relatively low rate of ITL due to economic constraints.

Multivariate Analysis of Risk Factors for ITL by Country

To check for multicollinearity, we tested correlations between the variables of interest. Our findings indicated that the correlation between quality of teamwork and interpersonal relationships ($r = 0.51$; $P < 0.01$; $n = 23,944$), and uncertainty regarding treatments ($r = -0.47$; $P < 0.01$; $n = 23,923$), were quite high. This was also the case for the correlation between quality of teamwork with influence at work ($r = -0.36$; $P < 0.01$; $n = 25,967$), and with opportunities for career development ($r = -0.32$; $P < 0.01$; $N = 26,123$). To prevent multicollinearity, we decided to include only quality of teamwork in the multivariate analysis.

Quality of teamwork seems to be the highest risk factor for ITL across Europe, with odds ratios (ORs) above 5 in 7 of the participating countries, and above 3 in the other ones. The highest influence was found for Norway (OR = 10.88). We have observed an exposure-outcome gradient that is significant for each country (see Tables 4 and 5 for more specific information).

Existence of vacant nursing assignment in the department did not seem to contribute significantly to ITL except among Polish nurses (OR = 1.44). In 3 countries, not having a fixed assignment was associated with higher ITL (Slovakia OR = 1.76; Italy 1.74; Germany 1.38). A similar trend was found in all other countries except Norway.

In the multivariate analysis, occupational category no longer seemed to be a significant predictor of ITL, except for Italian head nurses, Finnish specialized nurses, and Norwegian nursing aides, who all reported a higher ITL than registered nurses.

Male nurses seemed to have a significantly higher ITL compared with female ones in 6 countries. The highest influence was found in Slovakia (OR = 2.59), Finland (OR = 1.92), and Norway (OR = 1.81). Age seemed to be a significant factor. Being between 30 and 44 years of age was associated with higher ITL in 3 countries, that is, the Netherlands, Belgium, and France, whereas belonging to the oldest age group (>45 years old) only played a significant role in France (OR = 1.53). Conversely, older nurses reported less ITL in the other countries, especially in Finland, Germany, and Poland (OR = 0.37, 0.42, and 0.44, respectively).

In Italy, Belgium, and Norway, nurses living with another adult and a child have a lower ITL than nurses living with another adult only (OR = 0.66, 0.66, and 0.64, respectively). Moreover, in Italy, living as a single parent is also associated with less ITL. Conversely, nurses living alone have a higher ITL in Germany (OR = 1.41).

Work-family conflict was significantly related to ITL, but only in the Netherlands, France, Finland, and Germany (OR = 2.26, 1.63, 1.60, and 1.42, respectively). Low satisfaction with pay was a significant factor only in Belgium and Slovakia (OR = 1.85 and 1.63, respectively).

A high prevalence of burnout was a second major risk factor for ITL in 9 countries, whereas it was not a significant factor in Slovakia. The influence of high burnout on ITL is greatest in group 1 countries (in Belgium OR = 5.43; in Norway 3.42; and in the Netherlands 3.16). Its influence was also quite high in group 2 (OR = 2.33–3.55). However, the influence of high burnout on ITL was lower or not significant in group 3.

DISCUSSION

According to our findings, ITL in Germany, Italy, and United Kingdom reaches striking proportions and is also quite high in France and Finland. In these countries (group 2), nurses frequently report poor working conditions and poor health. In contrast, ITL is very low in the Netherlands, Norway, and Belgium (group 1). Nurses from these 3 countries often report better working conditions and health.²⁹ Our

TABLE 4. Multivariate Analysis of Factors Linked with Intent to Leave Nursing According to Country (Group 2)

	France			Finland			Germany			Italy			United Kingdom		
	N	Adj. OR	95% CI	N	Adj. OR	95% CI	N	Adj. OR	95% CI	N	Adj. OR	95% CI	N	Adj. OR	95% CI
Score of quality of teamwork															
High	1049	1		691	1		467	1		662	1		751	1	
Medium	1167	1.54	0.01 1.11 2.14	664	2.25	0.00 1.51 3.36	647	1.96	0.01 1.17 3.28	1030	1.68	0.00 1.18 2.40	685	3.05	0.00 2.36 3.95
Low	1332	4.18	0.00 3.09 5.66	375	5.97	0.00 3.94 9.03	938	5.36	0.00 3.27 8.78	1905	3.65	0.00 2.62 5.09	440	8.03	0.00 5.98 10.79
Vacant nursing assignments															
No or not specified	2101	1		1455	1		1237	1		1665	1		689	1	
Yes	1447	1.20	0.07 0.99 1.46	275	1.32	NS 0.91 1.91	815	1.08	NS 0.85 1.38	1932	1.04	NS 0.87 1.24	1187	0.96	NS 0.76 1.20
Fixed department															
Yes	3061	1		1415	1		1591	1		3153	1		1569	1	
No	487	1.10	NS 0.84 1.44	315	1.20	NS 0.85 1.69	461	1.38	0.02 1.04 1.82	444	1.74	0.00 1.36 2.21	307	1.30	0.07 0.98 1.72
Age, yr															
<30	629	1		265	1		467	1		374	1		327	1	
30-44	1744	1.34	0.06 0.98 1.82	736	0.63	0.04 0.41 0.98	1094	0.88	NS 0.65 1.19	2492	1.25	NS 0.94 1.68	956	1.01	NS 0.73 1.39
45+	1175	1.53	0.01 1.12 2.09	729	0.37	0.00 0.23 0.58	491	0.42	0.00 0.28 0.64	731	0.81	NS 0.56 1.17	593	0.79	NS 0.57 1.10
Gender															
Female	3108	1		1644	1		1653	1		2600	1		1752	1	
Male	440	1.09	NS 0.81 1.46	86	1.92	0.03 1.06 3.46	399	1.47	0.01 1.09 1.98	997	1.22	0.05 1.00 1.50	124	0.86	NS 0.56 1.32
Occupational category															
Registered nurses	1934	1		661	1		1303	1		3073	1		662	1	
Head nurses	264	0.99	NS 0.67 1.45	240	0.76	NS 0.43 1.38	397	0.71	0.05 0.50 1.01	316	1.79	0.00 1.31 2.45	518	1.09	NS 0.83 1.43
Specialized nurses	240	1.29	NS 0.88 1.90	772	1.47	0.02 1.07 2.03	313	0.86	NS 0.60 1.23	208	1.12	NS 0.78 1.61	488	1.03	NS 0.78 1.35
Nursing aids	1110	0.94	NS 0.75 1.17	57	1.77	NS 0.81 3.88	39	0.55	NS 0.16 1.91				208	0.82	NS 0.56 1.20
Personal situation															
With adult	822	1		549	1		661	1		1010	1		691	1	
Alone	541	1.14	NS 0.84 1.57	248	1.22	NS 0.78 1.89	502	1.41	0.02 1.05 1.91	477	0.94	NS 0.72 1.23	215	1.02	NS 0.71 1.45
Alone with child	304	0.93	NS 0.62 1.38	124	1.03	NS 0.56 1.87	131	0.77	NS 0.44 1.37	146	0.40	0.00 0.24 0.68	125	1.09	NS 0.70 1.71
With adult and child	1881	0.95	NS 0.73 1.23	809	0.90	NS 0.63 1.30	758	0.88	NS 0.64 1.21	1964	0.66	0.00 0.54 0.82	845	1.08	NS 0.84 1.39
Score of work conflicting family															
Low	1031	1		685	1		684	1		634	1				
Medium	1243	1.50	0.01 1.12 2.00	536	1.20	NS 0.82 1.77	732	1.15	NS 0.82 1.62	1238	1.06	NS 0.79 1.42			
High	1274	1.63	0.00 1.22 2.18	509	1.60	0.02 1.09 2.35	636	1.42	0.05 0.99 2.03	1725	1.25	NS 0.94 1.66			
Score of satisfaction with pay															
High	2161	1		283	1		1078	1		899	1		746	1	
Medium	749	1.24	0.08 0.98 1.57	521	0.74	NS 0.45 1.21	650	0.98	NS 0.74 1.29	1013	0.95	NS 0.73 1.22	530	1.06	NS 0.81 1.39
Low	638	1.21	NS 0.95 1.54	926	1.17	NS 0.75 1.82	324	0.81	NS 0.58 1.14	1685	1.22	0.09 0.97 1.54	600	1.28	0.06 0.99 1.66
Burnout score (CBI)															
Low	294	1		607	1		613	1		1312	1		479	1	
Medium	1276	2.01	0.03 1.05 3.84	692	1.27	NS 0.86 1.87	780	1.41	0.07 0.97 2.04	1130	1.56	0.00 1.23 2.00	685	1.61	0.00 1.19 2.17
High	1978	3.55	0.00 1.87 6.71	431	2.33	0.00 1.56 3.49	659	2.75	0.00 1.88 4.04	1155	3.17	0.00 2.49 4.03	712	2.71	0.00 2.02 3.64

For the United Kingdom only, satisfaction with teamwork could be computed, and the score of work conflicting family could not be computed. Percentage of explained variance: Germany 22.3%, Finland 22.8%, France 15.6%, Italy 17%, United Kingdom 25.6%.

TABLE 5. Multivariate Analysis of Factors Linked with Intent to Leave Nursing According to Country (Group 1 and 3)

	Group 1												Group 3											
	The Netherlands				Norway				Belgium				Poland				Slovakia							
	N	Adj. OR	95% CI	N	Adj. OR	95% CI	N	Adj. OR	95% CI	N	Adj. OR	95% CI	N	Adj. OR	95% CI	N	Adj. OR	95% CI						
Score of quality of teamwork																								
High	1195	1		1275	1		5770	1		1700	1		1438	1		395	1							
Medium	757	1.85	0.00	443	2.57	0.00	6226	1.86	0.01	6934	0.93	NS	700	1.44	0.01	812	3.03	0.00						
Low	283	5.51	0.00	125	10.88	0.00	6956	4.11	0.00	16,072	1		1304	1		489	1.62	NS						
Vacant nursing assignments																								
No or not specified	1071	1		1449	1		2880	1.33	NS	3277	1		334	1		237	1							
Yes	1164	1.31	0.08	394	0.86	NS	2880	1.33	NS	10,601	1.63	0.02	1613	0.63	0.01	863	0.77	NS						
Fixed department																								
Yes	2033	1		571	1		3277	1		5074	1.46	NS	453	0.44	0.00	426	0.51	0.01						
No	202	1.11	NS	394	0.86	NS	2880	1.33	NS	5074	1.46	NS	453	0.44	0.00	426	0.51	0.01						
Age, yr																								
<30	522	1		571	1		3277	1		16,425	1		2370	1		1495	1							
30-44	1123	1.65	0.03	694	1.17	NS	10,601	1.63	0.02	2527	1.52	0.05	30	0.78	NS	31	2.59	0.04						
45+	590	1.01	NS	578	0.80	NS	5074	1.46	NS	16,425	1		2370	1		1495	1							
Gender																								
Female	1938	1		1681	1		16,425	1		2527	1.52	0.05	30	0.78	NS	31	2.59	0.04						
Male	297	1.42	0.08	162	1.81	0.02	2527	1.52	0.05	16,425	1		2370	1		1495	1							
Occupational category																								
Registered nurses	1430	1		1330	1		12,780	1		2171	1		1237	1		1237	1							
Head nurses	760	4.29	NS	195	1.47	NS	1852	1.08	NS	1852	1.08	NS	229	1.14	NS	176	1.07	NS						
Specialized nurses	45	3.51	NS	318	2.06	0.01	1419	0.76	NS	2901	1.32	NS	151	0.73	NS	109	0.74	NS						
Nursing aids	714	1		523	1		4949	1		1419	0.76	NS	4	1.46	NS	4	1.46	NS						
Personal situation																								
With adult	319	1.26	NS	340	0.99	NS	2580	0.72	NS	4949	1		424	1		290	1							
Alone	48	0.38	NS	109	1.08	NS	1122	0.59	NS	2580	0.72	NS	120	1.35	NS	94	0.84	NS						
With adult and child	1154	0.88	NS	871	0.64	0.04	10,301	0.66	0.04	1122	0.59	NS	151	0.73	NS	111	0.54	NS						
Score of work conflicting family																								
Low	1254	1		1025	1		6267	1		6267	1		1201	1		334	1							
Medium	763	1.64	0.00	559	1.31	NS	6466	0.78	NS	6466	0.78	NS	763	0.99	NS	513	1.17	NS						
High	218	2.26	0.00	259	1.04	NS	6219	1.02	NS	6219	1.02	NS	436	1.34	NS	679	1.03	NS						
Score of satisfaction with pay																								
High	1217	1		760	1		929	1		929	1		280	1		325	1							
Medium	694	0.78	NS	539	0.76	NS	550	1.46	0.03	550	1.46	0.03	503	0.57	0.06	303	1.21	NS						
Low	324	0.88	NS	544	1.06	NS	384	1.85	0.00	1617	0.93	NS	1617	0.93	NS	898	1.63	0.05						
Burnout score (CBI)																								
Low	1657	1		1182	1		7173	1		7173	1		636	1		212	1							
Medium	450	2.01	0.00	453	1.96	0.00	4983	2.46	0.02	4983	2.46	0.02	882	1.26	NS	570	0.95	NS						
High	128	3.16	0.00	208	3.42	0.00	6796	5.43	0.00	6796	5.43	0.00	882	1.26	NS	570	0.95	NS						

For Norway, the question about free nursing position was not submitted. Percentage of explained variance: Belgium 18.2%; The Netherlands 19%; Norway 24%; Poland 17%; Slovakia 16.1%.

cross-national approach shows that working conditions may be more important than what are considered national population characteristics. Nurses exposed to negative working conditions who lack positive team characteristics respond similarly in each country, although the economic situation seems to play a moderating role.

Quality of teamwork seems to be a major factor associated with ITL for each occupational category. A serious lack of teamwork seems to quintuple ITL in 7 countries, and at least to triple it in the other ones. Our results confirm the importance of team building to reduce turnover as shown by other authors reporting on specific healthcare settings. Factors that we found predictive of turnover intentions in our study are similar with those described in smaller samples, or in only 1 country by other authors.³⁰⁻³² Safety initiatives in hospitals should focus on common healthcare interventions to promote wards organized in such a way that physicians and nonphysician professionals work together within teams. The extent to which nurses have access to information and resources, support, and opportunities in their work environment may have an impact on the perceived quality of collaboration with physicians and managers, the degree of job strain experienced in the work setting, and ultimately their health.³³

Shared governance structures have been shown to be highly successful in empowering nurses for professional practice in previous research.³⁴ The application of an action research model aimed at managing change with active participation by all members has been found to contribute positively to the development and implementation of change efforts.^{35,36} Results indicate that the model promoted positive staff morale, open communication, lower staff turnover, problem solving, and improved goal attainment.

We found a relatively high ITL for 3 countries where nurses reported not having fixed assignments, and a similar trend in the other countries. A high nurse turnover rate was associated with dissatisfaction engendered by forced floating to unfamiliar units.² Evaluation of outcomes comparing unrestricted unit floating with cluster (by related patient population or technical requirements) unit floating practices have been conducted in the United States.¹⁸ Similar to our findings, a high nurse turnover rate was found to be associated with dissatisfaction engendered by forced floating to unfamiliar units. Direct wage cost differences seemed to be negligible when unrestricted unit floating and cluster unit floating patterns were compared. Working with ill and disabled people without the necessary team support has been clearly shown to deteriorate the emotional and mental health of nurses, which in turn leads to a greater incidence of ITL.

Burnout was found to be the second risk factor for ITL. A high burnout score seems to triple the frequency of ITL in 5 countries, and to double it in 4. In prior studies, the overall level of nurses' burnout has been found to affect patient satisfaction. Moreover, patients receiving care within units that nurses perceive as having adequate staff, good administrative support for nursing care, and good relations between doctors and nurses were more than twice as likely compared with other patients to report high satisfaction with their care, and their nurses reported significantly lower burnout.¹²

We also found gender differences implying more negative outcomes for male nurses. Many leave the profession, as more male (and specialized) nurses are recruited for marketing jobs within the pharmacy and mediatechnical industry, where their competence is appreciated and where they may find less stressful conditions, although they may have to forgo some job security. Perceived job security seems to be a factor that especially influences the retention of nurses having children, except when work conflicts excessively with family obligations.

The results of our study are similar across countries although we found some differences in Slovakia and Poland (group 3), that is, countries where the labor market does not provide many work opportunities with sufficient job security. Another option taken by relatively young nurses in Eastern Europe is to work abroad in countries where salaries are more attractive.

Having work-family conflicts and being a male nurse increases ITL in midcareer. This is in keeping with research on adverse outcomes (sickness absence) for employees struggling to combine their work and family life.³⁷ In healthcare, many work situations require long work hours, frequent overtime, understaffing, and frequent shift change with short notice. Middle-aged nurses may look for other work situations allowing better work-family balance. On the contrary, female nurses and nurses living with another adult and/or a child have less ITL, perhaps to protect their work-family balance.

Again, good teamwork and interpersonal relationships allow a better fit to the different team members' needs. Moreover, a better agreement on work organization and information sharing reduces ambiguity and interruptions and might limit the need for overtime work. It is of primary importance to expand nurses' competences, to establish improved processes through collaboration and multidisciplinary teamwork (among nurses, nursing aids, physicians, and pharmacists), and to develop team training approaches and ward designs that facilitate high-quality teamwork.³⁸⁻⁴⁰

Nurses benefit from having a more collaborative work environment. In healthcare settings, individuals from different disciplines come together to care for patients. Although these groups of healthcare professionals are generally called teams, they need to earn true team status by demonstrating constructive teamwork,⁴⁰ group cohesion, and low turnover. Cohesive healthcare teams have 5 key characteristics: (1) clear goals with measurable outcomes,² (2) clinical and administrative systems,³ (3) division of labor,¹⁸ (4) training of all team members,¹³ and (5) effective communication.⁴¹ Empirical research on patient care teams suggests that teams with greater cohesiveness are associated with better clinical outcome measures, with higher patient satisfaction, and with improved patient outcomes.⁴²⁻⁴⁶

Previous research has indicated that serious problems in work design and workforce management threaten the provision of adequate healthcare.¹⁶ Organizational and managerial support for the nursing profession seems to have a profound effect on nurse dissatisfaction and burnout, and is directly, and independently, related to quality of care.¹⁷ Similarly, the

outcomes of our study imply that the amount of physical and emotional burden of nurses requires discussion within teams on work organization and equipment selection. Much more understanding and elaborate discussions are needed regarding strategies that might positively impact the environment where nurses work.⁴⁷

Limitations of Our Study and Recommendations for Future Research

Because we used self-reported measures, both for the predictor variables and for the dependent variable (ie, intent to leave), a common-method bias may exist.⁴⁸ To increase the validity of the outcomes, nurses' self-assessments and assessments by others, such as supervisors, should be considered in future research.

Another limitation of our study is that we included a large number of variables in our equations to control for confounding. This resulted in more missing data, which may have decreased our power to detect statistically significant differences. However, our large sample size, the magnitude of the different risk factors for ITL, the consistency of the findings across tenure groups and countries, as well as the narrow confidence intervals for the adjusted ORs are strengths of our analysis.

Future research where the impact of internal and external labor market opportunities is taken into account might enhance the understanding of the impact of teamwork factors and burnout on nurses' intent to leave. That is to say, *employment opportunities* should be used as a control variable, as the perception of these may highly influence nurses' turnover rate.⁴⁹

Our results may indicate that nursing is being delivered in some countries without leading to adverse outcomes such as burnout and ill health, and without resulting in a large proportion of dissatisfied nurses who want to leave their profession. Further analyses are needed to identify factors that can explain why some countries are better at retaining nurses than others. Many articles dealing with this important topic are in preparation by the NEXT study group team members and will be disseminated in the near future. However, moves toward organizations where physicians and non-physician professionals collaborate in teams are supported by our findings.

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