The effect of job satisfaction, absenteeism, and personal motivation on job quitting: A survey of Croatian nurses*

*Eva Smokrović, Maja Frencl Žvanut, Antun Bajan, Radivoje Radić, Boštjan Žvanut***

Abstract

Previous studies point to many inconsistencies regarding the determinants of job quitting. This study focuses on the impact of nurses' job satisfaction, work motivation, nursing practice environment, personal characteristics and absenteeism on their intention to leave the job. An anonymous survey was performed on a sample of Croatian registered nurses. The results indicate that nurses' job dissatisfaction, combined with a higher rate of absenteeism, represents a clear indication of their future turnovers. Nursing practice environment and personal motivation do not have a significant direct effect on the *Intention to leave the job*, but do have an indirect one through job satisfaction.

Keywords: job quitting; job satisfaction; self-determination theory; motivation;
JEL Codes: J63, J28

1 Introduction

Improvements in the quality of nurses' education have created new opportunities for increasing the quality of the entire healthcare system. The expansion of nurses' role in healthcare and community make them vital members of our society. Regrettably, however, the results of different studies indicate that the rate of nurses' turnover is dramatically increasing (Toode/Routasalo/Helminen/Suominen 2015; Masum/Azad/Hoque/Beh/Wanke/ Arslan 2016). This is further aggravated by nurses' brain drain, which represents a relevant healthcare system problem in many countries (Dimaya/McEwen/Curry/Bradley 2012; Moyce Lash/de Leon Siantz 2015), especially in the less developed European Union (EU) countries. This phenomenon has already been researched in Poland (Lesniowska 2008), Slovakia (Gurková/Soósová/Haroková/Ziaková/Serfelová/Zamboriová 2012), Romania (Paina/Ungureanu/Olsavszky 2016), Serbia (Santric-Milicevic/ Matejic/Terzic-Supic/Vasic/Babic/Vukovic 2015) and Slovenia (Goriup/ Stričević/Haložan 2015), and has been reported in Croatian newspapers (Lepan Stefančić/Kovačević Barišić 2015). The nursing profession in Croatia has been seriously affected by the financial crisis, the shortage of nurses, the decrease of salaries, budgets limitations, unpaid overtime work and a set of reforms of the

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** *Eva Smokrović*, University of Osijek, Faculty of medicine; University of Rijeka, Faculty of Health Studies, Croatia.
Maja Frencl Žvanut, Independent entrepreneur, Čuječna soba, Slovenia.
Antun Bajan, University of Osijek, Faculty of medicine, Croatia.
Radivoje Radić, University of Osijek, Faculty of medicine, Croatia.
Boštjan Žvanut (Corresponding author), University of Primorska, Faculty of Health Sciences, Slovenia. Email: bostjan.zvanut@fvz.upr.si.

healthcare system (EFN, 2012). Although official data about nurses' migration are not available, Lepan Stefančić and Kovačević Barišić (2015) report that an estimated 400–500 nurses migrated abroad in 2014 and 2015.

Nurse turnover is not only a problem of the less developed EU countries but also a serious global problem (Hayes/O'Brien-Pallas/Duffield/Shamian/Buchan/Hughes/Spence Laschinger/North 2012), and was carefully addressed in many developed countries and by the World Health Organization (2016). Several EU projects attend to this issue: e.g. "How to maintain health care workers' workability and quality of life" (2009–2011) – performed in Croatia (Wiskow/Albreht/De Pietro 2010); RN4CAST (2009–2011) – and in 12 European countries (Aiken/Sloane/Bruyneel/Van den Heede/Sermeus 2013); "Recruitment and Retention of the Health Workforce in Europe" (2015) (Barriball/Bremner/Buchan/Craveiro,/Dieleman/Dix/Dussault/Jansen/Kroezen/Rafferty/Sermeus 2015). Similar projects were also performed in other non-EU countries: e.g. Canada (Weidner/Graham/Smith/Aitken/Odell 2012) and the United States (Florida Center for Nursing, n. d).

On a microeconomic level, this phenomenon represents a big loss for the healthcare institutions faced with the turnover of competent nurses. In fact, these institutions have seen the return on the investment in nurses' education and training diminished and indeed transferred to other institutions. In the case of nurses' migration to other countries, however, it has become a severe problem at a macroeconomic level as well. Many East European countries offer nursing study programmes completely free of charge for all students except for the part-time ones and consequently, in the case of nurses' migration, this "societal investment in education" provides no return on investment for their societies.

Although Croatia is facing severe problems with nurses' turnover, the results of literature review indicate that there is no relevant study regarding this problem in this country. Hence, the aim of our study is to explore the phenomenon of job quitting in nursing by focusing on the effect of job satisfaction, absenteeism, personal motivation, nursing practice environment and personal characteristics.

2 Background

Job leaving is regarded as a major contributor to the shortage of nurses (Zhang/You/Liu/Zheng/Fang/Lu/Lv/Ma/Wang/Wang/Wu/Zhu/Bu 2014). In the continuation of the article, we will focus on an individual's intention to leave the job, which in previous studies resulted as a valid predictor of actual job leaving (Basak/Ekmekci/Bayram/Bas 2013). In simple words, an individual who has the intention to leave the job has a substantially greater probability to leave it than others. The use of this predictor resulted to be appropriate in several studies on nurses' turnover (Yildiz/Ayhan/Erdoğmuş 2009; Zhang et.al. 2014), despite the fact that Nei, Snyder and Litwiller (2015) neglect it.

Job satisfaction is defined as a set of beliefs and emotions that individuals have about their work (Lu/While//Barriball 2005). According to March and Simon's Theory of Organizational Equilibrium (presented in Ngo-Henha 2017), job satisfaction has a direct negative impact on the intention to leave the job. This is also in accordance with the results of previous studies (Lu et al. 2005; Yıldız et al. 2009; Basak et al. 2013; Dywili, 2015; Masum et al. 2016; Sojane/Klopper/Coetzee 2016; Liu/Aungsuroch/Yunibhand 2016), in contrast to Rizwan, Arshad, Munir, Iqbal and Hussain (2014), who found no association between job satisfaction and the intention to leave the job.

Personal motivation has a considerable theoretical background in the self-determination theory (SDT) (Gagné/Deci 2005; Deci/Ryan 2008), a widely accepted general theory of human motivation that has been applied to different areas (e.g. education, healthcare, sport), as well as to organisation and management (Niemiec/Ryan 2009). According to SDT, personal motivation has an important impact on job satisfaction. The rationale for using SDT lies in the multidimensional conceptualisation of motivation, as it covers the whole spectrum of the motivation continuum ranging from amotivation at its one end to external regulation (the most controlled and thus the least self-determined) at the other, progressively more self-determined: introjected, identified, integrated and intrinsic motivation (Gagné/Deci 2005). Table 1, section Motivation (MWMS), describes SDT motivations types. Central to SDT is the distinction between autonomous motivation and controlled motivation: controlled motivation consists of external regulation (social and material) and introjected regulation, while autonomous motivation consists of identified regulation and intrinsic motivation (Gagné/Deci 2005). According to SDT, autonomous motivation is a desirable form of motivation because it has a substantial positive impact on job satisfaction. In situations where cognitive flexibility or deep processing of information are required, as in registered nurses' tasks (Jeon/Jeon/Kim 2015), controlled motivation has a negative impact on job satisfaction (Gagné/Deci 2005). Toode et al. (2015) reported that numerous nurses' business motivation studies were mostly based on the examination of intrinsic motivation. Therefore, using SDT for assessing nurses' work motivation bridges this gap as it better describes the concept of motivation. Previous studies have shown that personal motivation is also related to job satisfaction (Tella/Ayeni/Popoola 2007; Singh/Tiwari 2011). However, Yildiz et al. (2009) in their study show that personal motivation has a direct impact on the intention to leave the job. However, none of these three studies was based on the use of SDT.

Work environment, in our case **the nursing practice environment,** is defined as a set of organisational characteristics of a work setting that facilitate or constrain professional nursing practice (Lake 2002). In 1981, the American Academy of Nursing identified, in a national study, a sample of "magnet hospitals", i.e. hospitals that demonstrated the ability to attract and retain nurses in their

employment and were therefore consistently able to provide high-quality care (McClure/Poulin/Sovie/Wandelt 1983). In the aforementioned study, the organisational characteristics of these hospitals were identified and then further operationalised in subsequent studies (Lake 2002). These characteristics (Table 1, section Hospital nursing practice environment) have a positive impact on nurses' job satisfaction (Kramer/Hafner 1989). The positive impact of these characteristics on job satisfaction was confirmed by numerous other studies (e.g. Choi/Flynn/Aiken 2012; Lorber/Skela Savič, 2012; Masum et al., 2016; Sojane et al. 2016; Wang/Dong/Mauk/Li/Wan/Yang/Fang/Huan/Chen/Hao 2015). However, some studies (Zander/Blümel/Busse 2012; Heinen/van Achterberg/Schwendimann,/Zander/Matthews/ Kózka/Ensio/Sjetne/Casbas/Ball/Schoonhoven 2013) report about their direct negative impact on the intention to leave the job. Interestingly, Patrician, Shang and Lake (2010) and Ogata, Nagano, Fukuda and Hashimoto (2011) showed that nursing work environment characteristics are related to both job satisfaction and the intention to leave the job. However, both of the aforementioned studies do not have an adequate theoretical explanation.

Previous studies considered different **personal characteristics** (e.g. age, gender, years of work experience) as determinants of the intention to leave the job. Heinen et al. (2013) and Suadicani, Bonde, Olesen and Gyntelberg (2013) both found that age is positively associated with the intention to leave the job. However, Lorber and Skela Savič (2012) and Wang et al. (2015) showed that age is a determinant of job satisfaction. Interestingly, Masum et al. (2016) in their study reported that age is associated with both job satisfaction and the intention to leave the job. Heinen et al. (2013) also showed that in some countries gender is related to the intention to leave the job. Masum et al. (2016) also showed that years of work experience are associated with the intention to leave the job but also with job satisfaction. Despite the fact that aforementioned studies reveal a significant impact of personal characteristics on job satisfaction and intention to leave the job, they do not provide a plausible theoretical explanation for these effects. In Ngo-Henha's (2017) excellent review of the existing turnover theories there was no evidence of the effect of personal characteristics on turnover intention and job satisfaction. The only exception was individual education (identified as knowledge in Resource based theory and education in Model of Human Capital theory). However, in both theories individual education was not directly associated either with job satisfaction or with intention to leave the job.

Absenteeism and especially its misreporting information represent one of the widespread problems among the healthcare staff in public healthcare facilities in developing countries (García-Prado/Chawla 2006). Farrell and Petersen (1984) showed that according to the Progression theory of job withdrawal, increases in absenteeism precede organizational turnover, which was confirmed also on nurses. Accordingly, absenteeism has a positive effect on the intention to leave. This was confirmed also by other studies, where absenteeism resulted as a valid pre-

dictor of job quitting (Saige, 1998). Also Cohen and Golan (2007) demonstrated that a higher rate of absenteeism provides an early indication of a withdrawal process among employees. Several studies also confirm the association between job satisfaction and absence from work (e.g. Cohen/Golan 2007; Wegge/Schmidt/Parkes/Van Dick 2007) despite the fact that Scott and Taylor (1985) report conflicting findings regarding this impact.

The results of literature review indicate many inconsistencies regarding the impact on nurses' job satisfaction, absenteeism, work motivation, nursing practice environment and personal characteristics on their intention to leave the job. Furthermore, the impact of personal motivation was insufficiently explored, as the SDT theory was not previously considered. According to the results of literature review, we pose five hypotheses (H), presented in Table 2.

3 Methods

A quantitative, non-experimental research design was used. An anonymous survey was performed, where a closed-ended questionnaire was used as an instrument for collecting the data.

3.1 Participants

The data were collected between 1st February and 31st March 2017 in Croatian towns: Pula, Rijeka and Karlovac, where 125 registered nurses (RN) voluntary responded to the questionnaire in paper form at the end of their lifelong learning course. To satisfy the criteria for registration and license renewal, all Croatian RN have the obligation to continuously participate in these courses. The course was an ongoing, generic, periodically repeated course, appropriate for all RN, independent of their field of expertise. RNs from different institutions and fields of nursing were enrolled in it randomly, according to their availability. In order to collect unbiased responses, four participants were subsequently excluded from the study as they had been absent more than 180 days in the last year, and another three due to their lack of any work experience in nursing. Furthermore, seven solved questionnaires were excluded due to incomplete responses. The final sample consisted of 111 participants: 82.0% females and 18.0% males (population of Croatian nurses: 11.9 % male, according to the Croatian Institute of Public Health 2018). Their average age was 31.9 (SD=6.9) years (range 22–53 years). The average years of work experience in nursing was 11.5 (SD=6.7) years ranging from 1 to 33. The average years of work experience on the current workplace was 7.9 (SD=5.8) years, ranging from 1 to 27. Our sample is comparable with the sample in Licul's (2015) study, performed on 222 nurses from Rijeka and Pula, where gender distribution was 82.5% females and 17.5% males, average age 36 years (range 22–58 years). Further comparisons with the population under consideration could not be performed due to the lack of official data.

3.2 Instrument

The instrument consisted of three sections: (1) Questions for the collection of participants' data: *Age*, *Gender, Institution*, *Years of work experience in the current workplace/nursing*, *Absence from work due to sick leave*, *Level of job satisfaction*, *Intention to leave the job*; (2) Multidimensional Work Motivation Scale (MWMS) items; and (3) Practice Environment Scale of Nursing Work Index (PES-NWI) items. MWMS and PES-NWI constructs are presented in Table 1 and the corresponding items in Appendices 1–2. To identify the level of absenteeism, *Absence from work due to sick leave* was measured with the number of reported days of absence due to sick leave in the last year. *Level of job satisfaction* was measured on a ten-point scale, where 1 represents total dissatisfaction and 10 total satisfaction. *Intention to leave the job* was measured with a dichotomous variable (Yes/No): "*Have you considered leaving the current work/job in the last year?*" MWMS was developed by Gagné, Forest, Vansteenkiste, Crevier-Braud, van den Broeck, Aspeli, Bellerose, Benabou, Chemolli, Güntert, Halvari, Indiyastuti, Johnson, Molstad, Naudin, Ndao, Olafsen, Roussel, Wang and Westbye (2015) in order to operationalize the SDT in the field of organizational behaviour. PES-NWI (Lake 2002) was developed by considering the work environment characteristics that were found in magnet hospitals.

Both MWMS and PES-NWI items were previously translated from English into Croatian and tested for validity and reliability. The authors' consent for the translation were received by email on 27 May 2015 for MWMS and on 13 January 2017 for PES-NWI. For both instruments, three independent translators translated the items independently and adjusted the final translated version. These were reviewed by an expert with considerable experience in translating texts from English to Croatian, and also by two experts in the field of psychology and human resource management. Subsequently, back-translations were performed by a professional translator who did not participate in the forward translation. The back-translated versions were consistent with the original questionnaires. The two experts who revised the PES-NWI instrument independently suggested exclusion of items 4, 5, 7 and 9 of the construct *Nurse participation in hospital affairs*, of items 2, 3, 5, 8, 9 and 10 of the construct *Nursing foundations for quality of care*, and of item 4 of *Staffing and Resource Adequacy* from the analysis as, according to their expertise, these are not applicable to Croatian nursing practice environment. However, the remaining items still adequately represent the PES-NWI constructs. The results of reliability (i.e. internal consistency, item-total/inter-item correlations and test-retest reliability) and validity tests (content and construct validity) for MWMS and PES-NWI resulted to be adequate and comparable with the results of reliability and validity tests of the original instruments. The MWMS items are measured on a seven-point, and PES-NWI on a four-point Likert scale, as in the original instruments.

The results of internal consistency tests are presented in Table 1 (Cronbach alpha). Bartlett's test of sphericity resulted as significant ($p<0.001$) for both factor analyses, Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was acceptable (MWMS: 0.689; PES-NWI: 0.704). The construct validity of MWMS and PES-NWI was tested on a final sample and resulted as acceptable. MWMS items loaded as expected on six constructs (Appendix 1), the only exception being item 1 of the construct *Introjected regulation*, which crossloaded on factors 3, representing *Introjected regulation*, and 5, representing *External regulation (material)*. Due to the relevance of this item, we decided not to exclude it from further analysis. MWMS items loaded as expected on the corresponding factors (Appendix 2).

3.3 Statistical analysis

Initially, the univariate data analysis was performed. Spearman's rank-order was computed for measuring the association between ordinal/nominal variables. To compare differences in responses to ordinal/numerical variables between two groups, Mann-Whitney U test was used. The internal consistency was tested with the use of Cronbach alpha coefficient, the construct validity of the aforementioned constructs was tested with Factor analysis. Hierarchical binary logistic regression was used to test the association between dependent and independent variables. All assumptions of binary logistic regression (e.g. adequate sample size, multicollinearity) according to Leech, Barrett and Morgan (2005) were carefully considered.

2.4 Ethical considerations

All participants were informed about the research aim and were asked to voluntarily participate in the study. All of them provided their written consent. They had the right to withdraw from the study at anytime without any consequences. Ethical approval was provided by the Ethical Committee of the Helena Smokrović Institution for Healthcare and Rehabilitation of Rijeka, and the Faculty of Health Studies in Rijeka (both in Croatia). The participants' confidentiality was guaranteed both during and after the study.

4 Results

Table 1 shows the number of items, Cronbach alpha, average values, standard deviation, minimum and maximum values of MWMS and PES-NWI variables. The scale reliability for all variables was higher than 0.6, which is the minimum recommended, especially when a small number of items is under consideration (Iivari, 1996). *Identified regulation* had the highest, while *Amontivation* had the lowest mean value of all MWMS variables. *Staffing and resource adequacy* re-

ceived the lowest mean value, while the *Collegial nurse–physician relations* received the highest.

In order to determine the effect of *Age* and *Years of work experience* (*current workplace/nursing*) on the MWMS, PES-NWI variables and the *Level of job satisfaction* Spearman's rank-order correlation was computed. Only two significant correlations greater than 0.3 were identified: between *Nurse participation in hospital affairs* and *Years of work experience (current workplace)* (r_s=-0.352, p<0.001); and *Nurse manager ability, leadership, and support of nurses* and the *Level of job satisfaction* (r_s=0.346, p<0.001). Other significant, but very weak correlations were found between the variables *Identified regulation* and *Age* (r_s=0.195, p=0.041), *Years of work experience (in nursing)* (r_s=0.190, p=0.046); *Nurse participation in hospital affairs* and *Age* (r_s= -0.263, p=0.005), *Years of work experience (in nursing)* (r_s= -0.262, p=0.005). Furthermore: *Level of job satisfaction* and *Intrinsic motivation* (r_s=0.232, p=0.011), *Amotivation* (r_s=-0.222, p=0.019), *Staffing and resource adequacy (*r_s=-0.190, p=0.045), *Collegial nurse–physician relations (*r_s=-0.228, p=0.016).

Also the Spearman's rank-order correlations between MWMS and PES-NWI variables were computed. No statistically significant, strong correlations were identified. Seven significant weak correlation (0.3<r_s<0.7) were identified: between *External regulation (social)* and *External regulation (material)* (r_s=0.363, p<0.001); between *Introjected regulation* and *Intrinsic motivation* (r_s=0.392, p<0.001), *Identified regulation* (r_s=0.525, p<0.001); *Identified regulation* and *Intrinsic motivation* (r_s=0.590, p<0.001); between *Nurse manager ability, leadership and support of nurses* and *Nurse participation in hospital affairs* and (r_s=0.323, p=0.001), *Nursing foundations for quality of care* (r_s=0.307, p=0.001), *Collegial nurse–physician relations* (r_s=0.333, p=0.001). Other significant weak correlations were found between *Amotivation* and *External regulation (social)* (r_s=0.229, p=0.016), *External regulation (material)* (r_s=0.270, p=0.004), *Identified regulation* (r_s=-0.243, p=0.010), *Intrinsic motivation* (r_s=-0.211, p=0.026); *Identified regulation* and *Collegial nurse–physician relations* (r_s=0.265, p=0.005), which was the only significant correlation between MWMS and PES-NWI variables; *Staffing and resource adequacy* and *Nurse participation in hospital affairs* (r_s=0.195, p=0.040), *Nurse manager ability, leadership and support of nurses* (r_s=0.242, p=0.011).

Calculation of Mann-Whitney U test indicates no significant gender differences in the *Absence from work due to sick leave*, MWMS and PES-NWI variables, except in *Identified regulation* (U=648.5, p=0.036), where the median value was higher for female participants (Me=6.7 vs. 5.8); and in *Intrinsic regulation* (U=655.5, p=0.049), where the median value was also higher for female participants (Me=6.0 vs. 5.0).

The average value of the variable *Level of job satisfaction* was 6.32 (SD=2.32) out of 10. The *Level of job satisfaction* was coded as dichotomous variable, where the median value (7) was selected as the cut-point for low/high level of job satisfaction: 45.9% were coded as low (≤7), 55.0% as high (7<).

Binary logistic regression was conducted to assess, whether the *Age*, *Gender, Years of work experience in the current workplace/nursing,* MWMS and PES-NWI variables significantly predicted a participant's level of satisfaction with his/her job above the median or below. Initially, all variables were entered in the model, where only three predictors resulted as significant (Table 3, All variables). These plus the predictor *Staffing and resource adequacy* (as it resulted with the lowest, non-significant p value) were entered stepwise in hierarchical binary logistic regression as presented in Table 3 (Steps 1–5). All five models resulted as significant ($p \leq 0.001$). Inclusion of the variable *External regulation (material)* in step 2 significantly added to the predictive power of the model (Omnibus test: $\chi^2=5.60$, $p=0.018$), as did the inclusion of the variable *Intrinsic motivation* (Omnibus test: $\chi^2=5.91$, $p=0.015$) in step 3; the inclusion of the variable *Identified regulation* (Omnibus test: $\chi^2=4.36$, $p=0.037$) in step 4, and finally, the inclusion of the variable *Staffing and resource adequacy* (Omnibus test: $\chi^2=4.26$, $p=0.038$) step 5. As the last included variable did not result as a significant predictor of the *Level of satisfaction* (Table 3, Step 5), a model with four significant predictors (Table 3, step 4) was considered for further analysis. The β coefficients suggest that *Nurse manager ability, leadership, and support of nurses* and *Intrinsic motivation* have a positive impact on the *Level of job satisfaction*; on the other hand, *External regulation (Material)* and *Identified regulation* have a negative impact.

The participants were absent from work due to sick leave on average 10.3 days (SD=21.6) in a year. The analysis of the variables *Level of job satisfaction* and *Absence from work due to sick leave* showed that participants who had been absent 7 days or less (80.2%) resulted with a relatively higher *Level of job satisfaction* (Me=7) than those (19.8%) absent more than 7 days (Me=5). The results of chi-square test indicate a significant association between the *Level of job satisfaction (low/high)* and the *Absence from work (≤7 days/>7 days)* ($\chi^2 = 5.93$, $p=0.015$). Approximately two thirds of participants (62.2%) expressed the *Intention to leave the job*, in contrast to those who did not (37.8%).

Binary logistic regression was conducted to assess whether the variables *Level of job satisfaction (low/high)*, *Absence from work due to sick leave (≤7 days/>7 days), Age*, *Gender, Years of work experience in the current workplace/nursing,* MWMS and PES-NWI variables significantly predicted whether a participant has the *Intention to leave the job or not.* Initially, all variables were entered in the model, where only three predictors resulted as significant (Table 4, All variables). These were entered stepwise in hierarchical binary logistic regression

(Steps 1–3). All three models resulted as significant ($p<0.001$). Inclusion of the variable *Absence from work (≤7 days / >7 days)* in step 2 significantly added to the predictive power of the model (Omnibus test: $\chi^2=6.06$, $p=0.014$), while the inclusion of the variable *Years of work experience in nursing* in step 3 did not significantly add to the predictive power of the model (Omnibus test: $\chi^2=0.51$, $p=0.474$). Furthermore, as the variable *Years of work experience in nursing* did not result to be a significant predictor of the *Intention to leave the job* (Table 4, Step 3), the step 2 model was considered for further analysis. Coefficients β suggest that the *Absence from work due to sick leave (≤7 days/>7 days)* has a positive impact on the *Intention to leave the job*, and the *Level of job satisfaction (high/low)* has a negative impact (Table 4, Step 2).

5 Discussion

This study revealed interesting insights into the reasons for job quitting and job satisfaction of Croatian nurses. Our study shows that the use of this theory and consequently MWMS provide additional details in explaining the phenomenon of job satisfaction and indirectly also the nurses' turnover. The SDT theory suggest that autonomous motivation (*Intrinsic motivation* and *Identified regulation*) has a positive impact on job satisfaction in situations that include interesting, complex tasks, and also in situations with less complex, monotonous tasks. Registered nurses' job, beside monotonous, routine tasks, also includes complex cognitive tasks and decision making (Jeon et al. 2015). Our results show that, as expected, *Intrinsic motivation* had a significant positive*,* while*,* surprisingly, *Identified regulation* had a negative impact on the *Level of job satisfaction. External regulation (material)* had a significant negative impact, while *External regulation (social)* had no significant effect on the *Level of job satisfaction* (Table 3, Step 4). Accordingly, H1 can only be partially confirmed because a positive impact on job satisfaction was not found in both types of autonomous motivations. Furthermore, H2 can also be only partially confirmed, as a negative impact on job satisfaction was not found in only one out of three types of autonomous motivations. These results are in contrast with Gagné & Deci (2005) and Lam & Gurland (2008), where *identified regulation,* as part of autonomous motivation, was associated with increased job satisfaction. Furthermore, the positive impact of introjected regulation and negative impact of external regulation (social) on job satisfaction was not confirmed. The result represents a paradoxical situation given that it shows that Croatian nurses, who identify themselves with their vocation, find meaning in their job and internalize values that nurses job brings, are likely to feel less satisfied in their job. One possible explanation is that nursing, although an autonomous discipline, is often subordinate to medicine and thus the nurses' self-identification with their profession probably puts them in an unenviable position.

According to our results, of all SDT motivation types only the *Intrinsic motivation* has positive impact on Croatian nurses' job satisfaction. Further research is needed to better clarify this phenomenon, especially that into other external factors (e.g. work climate, interpersonal relationships) that probably have an impact on both identified motivation and job satisfaction. Furthermore, our results indicate that not all types of controlled motivation represent a negative determinant of job satisfaction, as expected by SDT, with the exception of the *External regulation (material)*. Gagné and Deci (2005) suggested that controlled motivation is more appropriate when mundane tasks are performed, but also in this situation autonomous motivation plays an important role in increasing job satisfaction. This fact requires further attention and correct interpretation. Another possible explanation is that our participants are nurses, i.e. state employees whose salaries in Croatia are determined by strict regulations, and are consequently not subject to any substantial variations and possibilities in material incentives. Therefore, higher the nurses' *External regulation (material)*, the lower their *Level of job satisfaction,* and vice versa.

A more plausible explanation for our results can probably be found in the division of extrinsic (i.e. *External* (*Social* and *Material*), *Introjected* and *Identified regulation*) and intrinsic motivation types. Asgari, Rad and Chinaveh (2017) showed that extrinsic motivation has a negative impact on job satisfaction, which is partially in accordance with our findings. Similar to our study, Asgari et al. (2017) and also Raza, Akhtar, Husnain and Akhtar (2015) identified a positive effect of *Intrinsic motivation* on job satisfaction. Interestingly, Asgari et al. (2017) in their study also assessed the desire to stay on job, which reflects the opposite of the construct *Intention to leave the job*, used in or study. They found that intrinsic, external regulation and amotivation have a direct impact on the desire to stay on job, which is not in accordance with our findings. This divergence could be explained as a consequence of difference in populations included in the studies and different scales used for measuring work motivation, job satisfaction, and the intention to leave/stay.

Although several studies show that nursing practice environment characteristics have a significant effect on job satisfaction, our results indicate that of all PES-NWI constructs, only *Nurse manager ability, leadership and support of nurses* resulted as a valid predictor of job satisfaction (Table 3). Hence, H3 can only be partially confirmed. In their working environment, nurses are looking for a nurse manager who is not only focused on the usual managerial activities (e.g. coordinating resources, maintaining order), but rather on a leadership based on relationships and helping nurses to move toward achieving a vision (Schmalenberg/Kramer 2009). Obviously, Croatian nurses perceive that these abilities are far more important for their job satisfaction than other organisational characteristics. As *Nurse manager ability, leadership and support of nurses was* rated only slightly above the middle of the scale by the participants (Table 1), we can as-

sume, that this fact represents their call for improving the position and quality of this important role.

Both Choi et al. (2012) and Sojane et al. (2016) reported the significant direct association between nurse manager and the intention to leave the job, which is not consistent with our results despite the fact that PES-NWI was also used in both of them. Choi et al. (2012) reported that all PES-NWI constructs are significantly associated with job satisfaction, which does not support our findings. We suppose that also in this case these divergences could be attributed to the differences in the respective socio-cultural contexts of each study.

Despite the fact that different authors showed that personal characteristics, like age (Lorber/Skela Savič 2012, Wang et al. 2015; Masum et al. 2016) and years of work experience (Masum et al. 2016) are associated with job satisfaction, no similar results were identified in our study. Table 3 (Step 4) show that approximately a quarter of total variance in *Level of job satisfaction* (Nagelkerke R^2=28.3%) was explained by the *Nurse manager ability, leadership and support of nurses*, *External regulation (material)*, *Identified regulation*, and *Intrinsic motivation*. Although a satisfactory result, it clearly indicates that further studies should be performed to identify other predictors of job satisfaction, which is beyond the scope of this study.

Our result indicate that *Absence from work due to sick leave* resulted as positive and *Level of job satisfaction* resulted as negative predictor for identifying the potential candidates for job leaving (Table 4, Step 2), which confirms both H4 and H5. Both predictors explain slightly less than a half of its variance (Nagelkerke R^2=45.0%). This confirms the effect of job satisfaction on job quitting, reported by Tzeng (2002) and Sojane et al. (2016). Our results are also in accordance with Saige (1998), who showed that *Intention to leave the job* is associated with the absence from work. According to our results, no relevant association was identified between *Absence from work due to sick leave* and variables: MWMS, PES-NWI, and personal characteristics. Results in Table 3 (All variables) indicate that only *Years of work experience in nursing* resulted as significant predictor of *Intention to leave the job.* However, when entering this variable in the final model (Table 3, Step 3) it does not resulted as valid predictor (p=0.473) and its inclusion in the model improved the explained total variance only for 0.5 % (Step 4).

5.1 Theoretical implications

Although SDT provides a solid multidimensional conceptualization of motivation, the impacts of some types of motivation on job satisfaction in our results were in contrast with this theory. Hence, further studies should be performed in order to better explain these impacts by considering peculiarities of different professional groups and socio-cultural characteristics. Nevertheless, our study

represents a valid indication that use of the personal motivation concept instead of motivational factors can reveal interesting insights in the explanation of job satisfaction.

The concept of magnet hospitals was previously used in several studies for explaining job satisfaction of this population. Our findings indicate that of all nursing practice environment characteristics relevant for job satisfaction, only one resulted its significant determinant. Obviously, the impacts of these characteristics on job satisfaction vary and are probably different in various circumstances. Additional studies should be performed to identify and better explain these variations to use this questionnaire more thoroughly.

Last, but not least, it is evident from Ngo-Henha (2017) and other relevant studies that we are still far from a unified view of the turnover process. However, the results of this study confirm that job satisfaction and absence form work play an important role in this process and should not be excluded in further studies. Furthermore, a qualitative study on our population would probably reveal more interesting insights of this phenomenon and identify other potential determinants on both job satisfaction and intention to leave.

5.2 Implications for nursing and health policy

The findings of this study are directed to prompting healthcare/nurse managers and policymakers in Croatia to develop strategies and introduce package of measures for creating a positive practice environment, increase personal motivation and promote job satisfaction, thereby reducing the risk of turnover. Furthermore, key decision makers should undertake all necessary activities to improve nursing manager/supervisor's support and nurses' intrinsic motivation, as they positively affect their job satisfaction. Gagné and Deci (2005) argue that employees need to feel competence and autonomy, but also relatedness to maintain their intrinsic motivation. Nurse manager/supervisor should provide an autonomy-supported climate where these nurses' needs will be satisfied. A good nurse manager/supervisor should back up his/her staff in decision making, especially in case of conflicts, use mistakes as learning opportunities, and promote positive feedback. This role is crucial for improving the nursing practice as nurses perceive it as being very important for their professional development. Hence, healthcare managers and key decision-makers should promote nursing as an autonomous discipline (not subordinate to medicine) in order for them to be recognised as independent experts and equivalent members of a healthcare team.

Finally, we would like to encourage Croatian researchers and all relevant stakeholders to participate in national/EU/global initiatives regarding this issue. Our plan is to gain additional data at the national level in order to better understand this phenomenon and contribute with our research to these initiatives.

5.3 Limitations of our study

Despite the fact that considerable effort was invested to include all institutions from all Croatian counties, the study was performed on a sample of nurses form only three Croatian counties, where we were allowed to collect the data. Another limitation of the study is in the measurement of the absenteeism, measured through the number of days of absence due to sick leave in the last year, which, albeit being a valid indicator, does not provide the information as to whether the participants' sick leave was justified or not. Actually, it is doubtful whether the participants would provide the number of voluntary sick-leave days objectively, as intentional absence from work due to sick leave, with no justified reasons, represents a serious violation of work obligations.

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Declaration of interest

None.

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Table 1: No. of items, Cronbach alpha, mean and standard deviation (SD) of MWMS and PES-NWI variables (n=111)

Groups of variables Variables	Description*	No.of items	Cron. alpha	Mean	SD	Min	Max
Motivation (MWMS)							
Amotivation	The absence of motivation towards an activity.	3	0.617	1.75	1.08	1.00	5.33
External regulation (Social)	Doing an activity in order to obtain non-material rewards or avoid punishments administered by others.	3	0.897	1.92	1.27	1.00	7.00
External regulation (Material)	External regulation focusing on material rewards (e.g. money).	3	0.635	2.17	1.26	1.00	6.33
Introjected regulation	Refers to the regulation of behaviour that is internalized, without being truly accepted, involving feelings such as shame, guilt and ego-involvement.	4	0.783	4.52	1.66	1.00	7.00
Identified regulation	Doing an activity because one identifies with its meaning/value and voluntary accepts it as one's own.	3	0.903	5.94	1.35	1.00	7.00
Intrinsic motivation	Doing an activity for its own sake, i.e., because it is interesting and enjoyable in itself.	3	0.857	5.30	1.50	1.00	7.00
Hospital nursing practice environment (PES-NWI)							
Nurse participation in hospital affairs	Assesses the rate of nurses' involvement in the internal governance of the institution, their opportunity to participate in relevant decision-making processes, and the actual power of the role of chief nursing officer in the institution.	5	0.822	2.26	0.61	1.00	4.00
Nursing foundations for quality of care	Reflects the actual use of tools/approaches relevant for the quality of nursing (e.g. actual use of nursing care plans, nursing diagnoses) and the existence of clear nursing philosophy in the institution.	4	0.706	2.30	0.59	1.00	3.75
Nurse manager ability leadership and support of nurses	Refers to the ability of head nurses to be good nursing managers and leaders, support nurses, and back them up in their decisions.	5	0.793	2.26	0.64	1.00	4.00
Staffing and resource adequacy	Reflects the adequacy of registered nurses staff for implementing the nurses' tasks and other activities in a particular working environment.	3	0.889	1.49	0.65	1.00	4.00

Groups of variables Variables	Description*	No.of items	Cron. alpha	Mean	SD	Min	Max
Collegial nurse–physician relations	Refers to the quality of the working relationship between nurses and physicians in a particular work environment.	3	0.877	2.50	0.76	1.00	4.00

* MWMS descriptions: adopted Gagné et al. (2015); PES-NWI descriptions: adopted from Lake (2002).

Table 2: Research hypotheses, their confirmation and the corresponding variables

Abbr.	Hypothesis	Hypothesis confirmation	Variables
H1	*Autonomous motivation (i.e. Identified regulation and Intrinsic motivation) has a positive impact on Level of job satisfaction.*	Partially confirmed	*- Identified regulation* *- Intrinsic motivation* *- Level of job satisfaction (low/high)*
H2	*Controlled motivation (i.e. introjected regulation and external regulation -social & -material) has a negative impact on Level of job satisfaction.*	Partially confirmed	*- External regulation (Social),* *- External regulation (Material),* *- Introjected regulation* *- Level of job satisfaction (low/high)*
H3	*Nursing work environment characteristics have a positive impact on Level of job satisfaction.*	Partially confirmed	*- Nurse participation in hospital affairs* *- Nursing foundations for quality of care* *- Nurse manager ability leadership and support of nurses* *- Staffing and resource adequacy* *- Collegial nurse–physician relations* *- Level of job satisfaction (low/high)*
H4	*Level of job satisfaction has a negative impact on Intention to leave the job.*	Confirmed	*- Level of job satisfaction (low/high)* *- Intention to leave the job*
H5	*Absenteeism has a positive impact on Intention to leave the job.*	Confirmed	*- Absence from work (≤7 days / >7 days)* *- Intention to leave the job*

Table 3: Significant predictors of Level of job satisfaction (n=111)

Variable	β	SE	Odds ratio	p
All variables (χ^2=39.30, df=15, p=0.001, Nagelkerke R^2=39.9%)				
Amotivation	-0.16	0.27	0.85	0.549
External regulation (social)	0.31	0.23	1.36	0.174
External regulation (material)	-0.66	0.24	0.52	0.007
Introjected regulation	-0.01	0.17	0.99	0.964
Identified regulation	-0.62	0.27	0.54	0.023
Intrinsic motivation	0.72	0.23	2.05	0.002
Nurse participation in hospital affairs	0.27	0.45	1.31	0.541
Nursing foundations for quality of care	-0.61	0.48	0.54	0.200
Nurse manager ability leadership and support of nurses	1.06	0.50	2.90	0.032
Staffing and resource adequacy	0.68	0.42	1.97	0.102
Collegial nurse–physician relations	0.24	0.36	1.28	0.499
Age	0.02	0.09	1.02	0.796
Gender	0.19	0.67	1.21	0.779
Years of work experience in the current workplace	0.05	0.11	1.05	0.656
Years of work experience in nursing	-0.07	0.06	0.93	0.225
Constant	-2.67	3.04	0.07	0.380
Step 1 (χ^2=10.47, df=1, p=0.001, Nagelkerke R^2=12.0 %)				
Nurse manager ability leadership and support of nurses	1.06	0.35	2.88	0.003
Constant	-2.17	0.81	0.11	0.007
Step 2 (χ^2=16.08, df=2, p<0.001, Nagelkerke R^2=18.0 %)				
Nurse manager ability leadership and support of nurses	1.24	0.38	3.46	0.001
External regulation (material)	-0.39	0.17	0.68	0.022
Constant	-1.73	0.84	0.18	0.039
Step 3 (χ^2=21.99, df=3, p<0.001, Nagelkerke R^2=24.0 %)				
Nurse manager ability leadership and support of nurses	1.24	0.40	3.47	0.002
External regulation (material)	-0.41	0.17	0.66	0.018
Intrinsic motivation	0.35	0.15	1.42	0.020
Constant	-3.52	1.20	0.03	0.003
Step 4 (χ^2=26.35, df=4, p<0.001, Nagelkerke R^2=28.3 %)				
Nurse manager ability leadership and support of nurses	1.12	0.40	3.07	0.005
External regulation (material)	-0.43	0.18	0.65	0.015

Variable	β	SE	Odds ratio	p
Intrinsic motivation	0.59	0.20	1.80	0.003
Identified regulation	-0.44	0.22	0.64	0.050
Constant	-1.86	1.43	0.16	0.194
Step 5 (χ^2=30.63, df=5, p<0.001, Nagelkerke R^2=32.3 %)				
Nurse manager ability leadership and support of nurses	1.03	0.41	2.81	0.011
External regulation (material)	-0.47	0.19	0.62	0.011
Intrinsic motivation	0.63	0.21	1.87	0.002
Identified regulation	-0.50	0.24	0.61	0.033
Staffing and resource adequacy	0.77	0.39	2.16	0.051
Constant	-2.55	1.53	0.08	0.095

Table 4: Predictors of Intention to leave the job (n=111)

Variable	β	SE	Odds ratio	p
All variables (χ^2=57.62, df=17, p<0.001, Nagelkerke R^2=55.1 %)				
Level of job satisfaction (low/high)	-3.28	0.77	0.04	<0.001
Absence from work (≤7 days / >7 days)	2.12	0.92	8.34	0.021
Amotivation	0.23	0.30	1.25	0.459
External regulation (Social)	0.23	0.29	1.26	0.422
External regulation (Material)	-0.02	0.31	0.98	0.947
Introjected regulation	0.05	0.19	1.05	0.799
Identified regulation	0.12	0.30	1.12	0.692
Intrinsic motivation	-0.01	0.28	0.99	0.974
Nurse participation in hospital affairs	0.23	0.53	1.26	0.660
Nursing foundations for quality of care	-0.28	0.50	0.75	0.573
Nurse manager ability leadership. and support of nurses	0.21	0.54	1.24	0.690
Staffing and resource adequacy	0.54	0.43	1.72	0.210
Collegial nurse–physician relations	0.04	0.40	1.04	0.921
Age	0.01	0.12	1.01	0.933
Gender	0.76	0.79	2.13	0.339
Years of work experience in the current workplace	-0.12	0.14	0.89	0.400
Years of work experience in nursing	0.16	0.07	1.18	0.028
Constant	-0.89	3.47	0.41	0.797

Variable	β	SE	Odds ratio	p
Step 1 (χ^2=38.53, df=1, p<0.001, Nagelkerke R^2=39.9 %)				
Level of job satisfaction (low/high)	-2.94	0.58	0.05	<0.001
Constant	2.44	0.52	11.50	<0.001
Step 2 (χ^2=44.60, df=2, p<0.001, Nagelkerke R^2=45.0 %)				
Level of job satisfaction (low/high)	-2.85	0.59	0.06	<0.001
Absence from work (≤7 days / >7 days)	1.84	0.84	6.28	0.028
Constant	2.13	0.53	8.41	<0.001
Step 3 (χ^2=45.1, df=3, p<0.001, Nagelkerke R^2=45.5 %)				
Level of job satisfaction (low/high)	-2.83	0.60	0.06	<0.001
Absence from work (≤7 days / >7 days)	1.87	0.84	6.49	0.026
Years of work experience in nursing	0.03	0.04	1.03	0.473
Constant	1.88	0.62	6.58	0.003

Appendix 1: Results of factor analysis for MWMS items

Construct*	Factor					
Items* ("Why do you or would you put effort into your current job?")	1.	2.	3.	4.	5.	6.
Amotivation						
I don't, because I really feel that I'm wasting my time at work						0.722
I do little because I don't think this work is worth putting effort into						0.806
I don't know why I'm doing this job, it's pointless work.						0.700
External regulation (social)						
To get others' approval (e.g.supervisor. colleagues. family. clients...).		0.881				
Because others will respect me more (e.g.supervisor. colleagues. family. clients...).		0.903				
To avoid being criticized by others (e.g.supervisor. colleagues. family. clients...).		0.869				
External regulation (material)						
Because others will reward me financially only if I put enough effort into my job (e.g.employer. supervisor...).					0.809	
Because others offer me greater job security if I put enough effort into my job (e.g.employer. supervisor...).					0.810	
Because I risk losing my job if I don't put enough effort in it.					0.429	
Introjected regulation						
Because I have to prove to myself that I can.			0.466		0.454	
Because it makes me feel proud of myself.			0.616			
Because otherwise I will feel ashamed of myself.			0.902			

Construct*	Factor					
Items* ("Why do you or would you put effort into your current job?")	1.	2.	3.	4.	5.	6.
Because otherwise I will feel bad about myself.			0.890			
Identified regulation						
Because I personally consider it important to put effort into this job.				0.837		
Because putting effort into this job aligns with my personal values				0.862		
Because putting effort into this job has personal significance to me.	0.543			0.656		
Intrinsic regulation						
Because I have fun doing my job.	0.812					
Because what I do in my work is exciting.	0.915					
Because the work I do is interesting.	0.782					
Eigenvalues. cumulative eigenvalues and total variance (%) by factors	5.15	3.40	1.85	1.46	1.31	0.94
Total percentage and cumulative addition (%)	27.1	17.9	9.7	7.7	6.9	5.0
Total percentage of the factor model (%)						74.3

* from Gagné et al. (2015)

Appendix 2: Results of factor analysis for PES-NWI items

Construct*	Factor				
Items*	1.	2.	3.	4.	5.
Nurse Participation in Hospital Affairs					
Staff nurses are involved in the internal governance of the hospital e.g. practice and policy committees).	0.793				
Opportunity for staff nurses to participate in policy decisions.	0.760				
Opportunities for advancement.	0.707				
Career development/clinical ladder opportunity.	0.692				
Staff nurses have the opportunity to serve on hospital and nursing committees.	0.680				
Nursing Foundations for Quality of Care					
Use of nursing diagnoses.					0.676
Nursing care is based on a nursing, rather than a medical, model.					0.757
A clear philosophy of nursing that pervades the patient care environment					0.694
Written, up-to-date nursing care plans for all patients.					0.669
Nurse Manager Ability, Leadership, and Support of Nurses					
A nurse manager who is a good manager and leader		0.691			

Construct*	**Factor**				
Items*	**1.**	**2.**	**3.**	**4.**	**5.**
A nurse manager who backs up the nursing staff in decision making, even if the conflict is with a physician.		0.690			
Supervisors use mistakes as learning opportunities, not criticism.		0.647			
A supervisory staff that is supportive of the nurses.		0.756			
Praise and recognition for a job well done.		0.671			
Staffing and Resource Adequacy					
Enough staff to get the work done			0.918		
Enough registered nurses to provide quality patient care.			0.948		
Adequate support services allow me to spend time with my patients.			0.800		
Collegial Nurse–Physician Relations					
A lot of teamwork between nurses and physicians				0.846	
Physicians and nurses have good working relationships.				0.866	
Collaboration (joint practice) between nurses and physicians.				0.893	
Eigenvalues, cumulative eigenvalues and total variance (%) by factors	4.55	2.91	2.45	2.03	1.23
Total percentage and cumulative addition (%)	22.8	14.6	12.2	10.2	6.1
Total percentage of the factor model (%)					65.9

* from Lam (2002)