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Efficacy of a hypocaloric Mediterranean Diet in overweight patients: Factors predictive of completion

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Abstract

Aim: To assess the extent and directions of internal hospital turnover of registered nurses and to examine the associated factors and stressors.

Background: Internal turnover of hospital nurses is mainly horizontal. Occurring on a large scale, it could lead to dropout of skilled personnel, burdening hospitals both financially and in terms of human resources, affecting the quality of care.

Methods: A secondary analysis based on data from the national study on "Patterns and trends of the nursing workforce in Israel". A structured telephone interview was conducted of 2,098 hospital nurses (October 2008-February 2009).

Results: The rate of internal turnover between hospital departments was 29.7%. The main departments from which nurses moved were medical and surgical. The main departments from which nurses moved were oncology departments, Intensive Care Units, nursing administration. The major work-related stressor concerned salary (59%), two predictors of internal turnover were nurses with children under the age of 18 and academic degree nurses.

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Introduction

Workforce instability that is related to the ongoing global shortage of registered nurses (RNs) during the past two decades has affected the realities of the nursing workforce in Israel [1]. To overcome the shortage and keep nurses in the workplace, managers continue to search for ways to support staff by enhancing and promoting the work environment [2]. Internal turnover refers to job changes within an organization [3]., and is one policy path to career development, motivation and diversity in workforce management, contributing to nurses' retention. The positive side of mobility allows for better matching of employees to their positions, the generation of new ideas by new employees, opportunities for career change, knowledge updates, and appropriate staffing levels for understaffed departments [3]. Negative consequences may include impaired productivity and quality of care, elevated costs, and a greater burden on the remaining staff [3, 4].

Background

Healthcare organizations and nursing in Israel Israel as a developed country has a socialized healthcare system. Tertiary healthcare is mainly provided by public and governmental hospitals. Overall, Israel has 371 hospitals of which 46 are general, 13 provide mental healthcare, and the rest – rehabilitation, geriatric and chronic care [5].

Nursing in Israel is regulated by the Nursing Division of the Ministry of Health. Its function is to initiate nursing policy on the national level and its responsibilities include nursing education, registration, standardization and professional development. There are three levels of nurses in Israel – Licensed Practical Nurses (LPNs), Registered Nurses (RNs) - diploma graduates, and universities or colleges RN graduates (holding a Bachelor of Sciences in Nursing degree). An RN diploma is a minimum requirement for nursing practice; A BSN became a decade ago the requirement level for professional development [6]. This decision accords with WHO Resolution No. WHA63.21 (2011) noting that nurses and midwives should provide care based on high level of knowledge and skills required to maximize the physical, psychological, emotional and social well-being of individuals and families [7]. Most of the new RNs entering the profession in Israel (81%) are new graduates from universities, colleges and second-career courses [8].

The education programs for LPNs were terminated in 2009 and no more new LPN licenses have since been issued. The majority of nurses in Israel are university/colleges graduates; 48%, baccalaureate and 18%, hold master or PhD degrees. [9, 10]

The global nursing shortage has impacted on the demand for nurses and raised the probability of nursing turnover. The related workforce instability, due to the ongoing global shortage of RNs over the past two decades, has also affected Israel's nursing workforce.

The nursing workforce is measured in the

OECD countries as a number of registered nurses per 1000 populations. In Israel – this rate is based on nurses below the age of 60, holding an active license. The nursing rate in Israel is 5.6 nurses/1000 population [11], one of the lowest among OECD countries (which average 8.3 nurses/000 population) [1]. Seventy-four percent (74%) of the nurses work in hospitals and approximately 10% are men [9]. Half the nurses are below the age of 45, approximately a third are between the ages of 45 and 59, and about a fifth are 60 years or more. Sixty-seven percent (67%) of the nurses work full time or more [9]. Hospital nurses are assigned to specific departments. Some departments/units demand particular advanced (post-basic) clinical training, such as oncology, general intensive care, pediatric intensive care, neonate intensive care, nephrology, psychiatry, geriatrics, etc. Training equips nurses with advanced skills and broader clinical authority for interventions and decision making. There is no ladder of clinical promotion in Israel.

Nursing turnover has both positive and negative aspects. From management's point of view, it is a way to implement a policy of career development, motivation and diversity in workforce management and it may contribute to nurses' retention. Beyond its financial implications, nursing turnover affects the satisfaction and security of nurses, other clinicians and healthcare clients [12]. It facilitates the generation of ideas by new employees, eliminates low-performing staff, contributes to a better matching of personnel and positions, provides professional opportunities and directions, promotes knowledge, and improves the quality of care. On the negative side, it may harm productivity and the quality of care, elevate costs, and place a greater burden on the remaining staff [3].

The literature on nursing turnover has concentrated mainly on rates of exit or intended exit from an organization rather than on internal turnover [13]. Internal turnover is regarded as an efficient, cost-effective method of talent deployment, and can be a significant component of a company's staffing strategy [14]. Studies focusing on nurses have showed many methodological problems due to different definitions, sample issues and comparative results. Moreover, the literature does not distinguish between turnover within an organization and turnover between organizations [15].

Overall, adults in the United States, including nurses (up to 35 years of age) change jobs 15 times in the course of their working life. Nurses specifically achieve career goals 4-5 times during their working years, including changing professional specialties [16]. One way to study turnover is to measure the intention to leave. In a study of 2,000 intensive care nurses in hospitals across the U.S., a 17% rate was found of intention to leave, half of which was explained by working conditions [17]. One variable found to be moderately related to internal nursing turnover in Canada and the United States was staff training [18]. Other researchers found that within a period of only two months, internal nursing turnover ranged from 3.1% to 4.5% in units with a poor atmosphere of team learning

[19].

Several factors were described influencing internal hospital mobility. One of the leading factors is job stress [13]. This variable was studied for general turnover (leaving an organization) rather than in the context of internal nursing turnover.

The most common explanation for nursing turnover is workload [20, 21]. Job-related stressors connected to nursing turnover or the intention to leave are workload, a negative practice environment, lack of peer support or poor relationships, and little managerial support [3, 22, 23]. Lack of control in the workplace is also identified in several studies as a significant stressor causing nurses to change their workplace or careers [24, 25]. Other associated variables causing stress and influencing decisions to leave are emotional and physical demands [26] , role ambiguity and role conflict, poor working relationships with nursing managers, physicians and other nurses. [22, 27,28].

Additional reasons for moving – in descending order – were lack of autonomy and the inability to deliver care according to their competencies, low satisfaction with salary, benefits and support for ongoing professional development. Yet, literature reviews have indicated that little is known about the true impact of these workplace stressors on exits from the labor force, in terms of a connection between job stress and job changes [25].

Hospital investment in nursing proficiency for the various units along with the nursing shortage make it necessary to retain nurses in their specialties for as long as possible and minimize internal turnover. The monitoring of internal nursing turnover is important for both nurses and organizations. From a managerial point of view, workforce planning, the nature and direction of mobility, the extent of movement, and the units warranting greater managerial attention can be better assessed and upon it, interventions can be implemented.

The aim of this study was to describe the internal turnover of RNs in Israeli hospitals and examine the factors affecting it.

Objectives

To evaluate internal hospital turnover rates

To assess the directions of the internal mobility of hospital nurses

To examine the predictors of internal turnover.

Materials and methods

This is a secondary analysis of data from a national study on the patterns and trends of Israel's RN workforce (9).

Initial research

The initial research is a national study focused on the trends and patterns of the nursing workforce in Israel. In this study, prior to forming the questionnaires, preliminary one-on-one interviews were conducted with Directors of Nursing and Unit Nurse Managers to understand and iden-

tify factors the nursing workforce trends.

To this end, a closed primary questionnaire was constructed focusing on the following variables: demographics; professional education history, current employment; organizational position/level; professional seniority, employment status and employment history. The questionnaire was in the interviewees' native languages and tested for face and expert validation. To assess the phenomena of turnover, questions on external and internal turnover were formulated. An example for external turnover question: "In the last ten years, have you moved from one kind of hospital to another, if yes, please indicate how many times"; and internal turnover "In the last ten years, have you moved from one unit to another in the same hospital? If yes, please indicate how many times and from which unit to where". The interviews served as a basis for identifying topics to be included in a national telephone survey. Before executing the survey a pilot study with a convenience sample of nurses from all levels of care, was conducted to detect potential misunderstandings and biases.

Since turnover was not measured as a combined variable, but assessed using the single parameter of the number of moves within hospitals, no validation was required.

Participants

The initial study population of the survey numbered approximately 32,000 RNs of working age (24 to 60). The sample was drawn from the Ministry of Health (nursing administration) register of RNs in Israel. For the purpose of the study, 10% of the nurses listed were interviewed (3,200), based on an assumed response rate of some 70%. This assumption rested on past experience [29]. A random sample was selected. The sample size was set to obtain an effect, given the predetermined alpha level test required and intensity of 80% or more.

In the initial survey, 3,216 RNs were interviewed (the survey ended when we reached the planned number of respondents, a response rate of 72%). The nurses in the study had a higher rate of post-basic education and included more native Israelis than nurses not interviewed. The total number of nurses working in the profession during the study was 2,856, of whom 2,098 (73%) were hospital nurses. The working hospital nurses where included for the secondary data analysis.

Data collection

Prior to data collection for the main study, a preliminary letter was sent to the sampled nurses to explain the importance and purpose of the study, and assure them of confidentiality and anonymity. It contained an addressed return envelope. Nurses declining to participate in the survey were asked to inform the investigators by return mail, e-mail or telephone. For the initial study, data were collected through a national telephone survey between October 2008 and February 2009, using a closed questionnaire among a random sample of RNs of working age. Secondary analysis was based on data collected from the initial research focusing on RNs

working at hospitals.

Ethical considerations

The study was based on two Israeli laws governing database management, privacy and information resources. According to legal counsel, Internal Review Board (IRB) approval was unnecessary. Nonetheless, prior to data collection each nurse received a return envelope to be used in the case of declining participation. In addition, approval was obtained from the legal department of the Ministry of Health prior to data collection.

Variables

Demographic variables - age, education level, participation in a post-basic education course, seniority in the profession, marital status, nationality, country of birth, year of immigration.

Occupational variables – working department/unit, position, working hours, working part-full time.

Internal turnover in hospitals – the variable was based on self-reported employment histories at the hospital during the past 10 years. The variable was dichotomous - moved / did not move to another area at the hospital.

Stressors - interviewees were presented with 16 statements depicting possibly stressful work situations and asked to what extent these interfered with their work. The series was built on other studies addressing the working life of nurses (Royal College of Nursing, 2005; The Board of Registered Nursing, 2006; West Virginia Nurse Association, 2007). A factor analysis of the above studies divided work stressors into the four following groups: compensation and working conditions, workload, the encounter with patients and families, and working relations. Since Cronbach's alpha was less than 0.7 between the items, stressors were not collated into one variable but analyzed as single questions.

Data analysis

Variables were analyzed using SPSS statistical software for distributions (v. 15, Chicago, Illinois). Descriptive analysis was used to examine distributions, applying the Chi^2 test to the interdependence of non-quantitative variables (measured on a nominal scale). The significance of independent variables was examined through multivariate analysis (logistic regressions) [30]

Results

Sample Characteristics

(insert table 1 &2)

The study population numbered 2,098 hospital RNs. Sixty five percent (65%) were staff nurses, 17% were head nurses and the rest were either clinical instructors or filled another administrative role. The demographic characteristics are presented in table 1. The majority were below the age of 45, women, married, Israeli born with an academic degree or post-basic education. Professional tenure divided almost evenly between the groups: 24%, up to 5 years of tenure; 27%, 6-10 years; 27%, 11-20 years; and 22%, 21 years and more. Eighteen

Table 1. Background data, by workplace (Percentage)

	HOSPITAL NURSES
Age	
24-34	24
34-44	34
45-62	42
Gender	
Man	12
Woman	88
Education level	
Without academic education	33
First degree	49
Second degree and above	18
Participation in post-basic education course	
With	58
Without	39
During	3
Number of post-basic education courses	
One	79
Two	21
Seniority	
Up to 5 years	24
6-10 years	27
11-20 years	27
21 years and above	22
Marital status	
Married	80
Unmarried	20
Children	
Under 18 years	66
Other [1]	34
Nationality	
Jewish	87
other	13
Place of birth	
Israel	52
Former USSR (Union of Soviet Socialist Republics)	36
Other	12
Year of immigration	
Israeli native	52
Until 1989	32
1990+	17

[1] No children/children above 18 years.

Table 2. Nursing workforce distribution by hospital department (Percentage)

	Major department n=1,770
Total	100
Internal	15
Surgery	12
ICU	12
Delivery room and maternity	9
ED	6
Operating room	6
Pediatrics	5
Oncology	4
Nursing administration	4
Orthopedics	3
Gynecology	3
Pre-natal	3
Nephrology/dialysis	3
Outpatient clinics	1
Nursing school	1
Day care	1
General nurse	0
Other [1]	12

[1] Including: geriatrics, hematology, dermatology, ophthalmology, psychiatry, rehabilita-

percent (18%) of the nurses worked less than 30 hours per week, 51% worked between 31 and 40 hours, and 31% worked more than 41 hours.

The nursing distribution by hospital department was as follows: medical departments (15%), surgical (12%), ICUs (12%), maternity and delivery room (9%), ER and OR (6% each), and children (5%). The rest of the nursing workforce (35%) was distributed in small percentages among other hospital departments (Table 2).

Internal turnover rate

The rate of overall turnover between hospital departments was 29.7%. This rate reflects the number of nurses who had moved at least once in the past ten years divided by the total number of hospital nurses sampled. The major departments from which nurses reported to have moved were medical and surgical. Forty-two percent (42%) of those working in oncology, 48% of those working in ICU, and 23% and 24% respectively of those working in children and ER had previously worked in internal medicine. Fifteen percent (15%) of the nurses in ICU, 14% in nursing administration, and 14% in internal medicine had previously worked in a surgical department. In addition, 18% of the nurses working in internal medicine had previously worked in a different internal department. The same principle was found in the turnover of nurses from one surgical department to another. Twenty-one percent (21%) of the nurses working in hospital administration had previously worked in ICU (Table 3).

(Insert table 3)

Work-related Stressors

Nurses were asked about the degree that stressors affected their work, whether "much" or "very much". The main stressor (59%) was associated with salary. Other factors related to physical and verbal violence, work overload, too much paperwork, and the lack of career opportunities. In addition, 20% of the nurses described stressors such as working hours, too much patient or family involvement in care, the emotional burden, and the division of nursing tasks between nurses and nurse's aides.

Predictors of internal turnover

Multivariate logistic regression was used for hospital nurses who had moved at least once between hospital departments. Since correlations between all work stressors and internal turnover were low, under 0.1, they were excluded from the logistic model. Thus, the logistic regression model included demographic and professional characteristics - working hours, age, gender and marital status, having children under the age of 18, place of birth, academic education, post-basic clinical education, and bedside versus managerial nurses. Two significant predictors of internal turnover were found. For nurses with children under the age of 18, the probability of changing departments was 1.47 compared with nurses whose children were older; and for nurses with an academic degree, the probability of moving was 1.35 compared with that

Table 3: General Hospital nurses: Changing departments in the past 10 years, previous and current [1] (Percentage)

n=513	Internal n=49	Nursing administration n=29	Surgery n=54	ICU n=65	ED n=29	Pediatric n=25	Delivery room & maternity n=50	Oncology n=24
Previous department	100	100	100	100	100	100	100	100
Internal	18	14	24	48	24	23	18	42
Surgery	14	14	19	15	10	3	8	13
ICU	10	21	13	8	14	7	10	4
ED	8	14	7	5	0	7	4	4
Orthopedics	8	0	6	3	3	3	2	0
Delivery room and maternity	0	3	2	3	3	0	12	0
Pediatrics	0	0	0	2	17	10	8	8
Operating room	4	10	0	2	3	0	2	0
Other	38	24	29	14	26	47[4]	36[3]	29[2]

1. Table does not include departments with a total reported turnover of less than 20
2. Including oncology (13%) and hematology (8%)
3. Including gynecology (20%)
4. Including oncology, natal, recovery (7% each)

of nurses lacking an academic degree (Table 4). The model explains 2% of the turnover.

(insert table 4)

Discussion

Little is known about the turnover of nurses between hospital departments. The issue of internal turnover is especially important for nursing directors. An understanding of its range and directions, and the identification of its main reasons are important for their workforce planning and staff development policy (3). The current study was the first and only one of its kind in Israel to measure turnover within hospitals on a national level.

The present study found an overall internal turnover rate within Israeli hospitals of 29.7%. This means that almost one out of every three nurses may move at least once between hospital departments over a 10-year span. The only comparable data found in the literature related to the internal turnover rate of schoolteachers, estimated at 12.9% [32].

The internal turnover rate is different for different departments. The majority of moves were found to be from general departments (medical and surgical), to specialty units or departments, such as ICU, the emergency department, oncology, maternity and pediatrics. The direction of this internal turnover may be related to Israeli policy on professional development, which mandates post-basic education courses for specific units/ departments. These courses are clinical in nature and graduates are qualified to intervene in more advanced clinical situations. Moreover, only they may serve as evening- and night-shift managers in these specific departments or units, a demand that is not required in medical-surgical departments. Thus, many new graduates are absorbed by general departments (medical-surgical) and as they acquire post-basic education, they move on. This movement may be due to managerial requirements or a personal preference to apply their advanced knowledge in a specific clinical field. Another explanation for the move from general departments to specialized units may be related to the nurses' perception of their professional image. Nurses with post-basic education (PBE) were found to have a more favorable professional image and were more satisfied than nurses without PBE [32]. It might be that nurses with PBE working in general departments seek to improve their professional self-image by moving to specialized units and practicing their advanced skills.

More than 20% of the nurses currently working in nursing administration have previously worked in ICU. Several hypotheses may explain this finding. PBE requires at least a first degree and the majority of nurses in ICU do hold an academic degree, which is also a prerequisite for managerial positions. One explanation may be related to the number of nurses graduating from PBE courses. Since the majority do graduate from the PBE course for ICU, the probability of their moving to other domains is greater. Another explanation may

Table 4: Predictors of turnover in hospital departments - logistic regression (N=1,724)

Variable	Basis	Regression coefficient B	Odds ratio (1/B)	Confidence intervals	
Weekly working hours					
21-30 hours	1-20 hours	0.14	1.15	2.03	0.64
31-40 hours	1-20 hours	-0.13	0.88	1.50	0.51
41+ hours	1-20 hours	0.09	1.09	1.90	0.63
Age					
35-44	24-34	0.01	1.01	1.34	0.76
45-62	24-34	-0.18	0.84	1.13	0.62
Gender					
Woman	Man	0.19	1.21	1.72	0.85
Marital status					
Married	Unmarried	-0.17	0.84	1.13	0.63
With children up to 18 years	No children up to 18 years	(*)0.36	1.43	1.87	1.09
Place of birth					
Former USSR (Union of Soviet Socialist Republics)	Israel	-0.18	0.84	1.07	0.66
Other	Israel	-0.28	0.76	1.08	0.53
Education					
Without post-basic education course	With post-basic education course	-0.07	0.93	1.17	0.74
With academic education	Without academic education	(*)0.30	1.35	1.73	1.05
Position					
Special nursing role	Staff nurse	0.01	1.01	1.31	0.79
Permanent		(**)-1.08	0.34		

*p<.05

be related to the job characteristics of ICU, which demand planning and organizational skills to assure standard procedures and assertiveness in managing stressful and/or life-threatening situations. Conflicting demands are an integral part of managerial roles, requiring assertiveness and immediate decision-making skills [33]. Furthermore, some ICU clinical situations are characterized by uncertainty, similar to managerial situations where not all the details of a problem may be known.

Logistic regression identified only two significant predictors of internal nursing turnover: having children under 18 and having an academic degree, for whom the probability of changing departments was 1.47 and 1.35 respectively. In the former case, turnover may relate to family demands. In the latter, an academic degree provides nurses with broader opportunities, thereby allowing for greater turnover. This explanation is based on an academic degree as a prerequisite for most nursing positions. The literature yielded additional variables related to nursing turnover: personal reasons (transition following a spouse's relocation, improvement in quality of life), professional reasons (a desire to study and upgrade professionally at superior centers or earn professional promotion) and employment reasons (a higher salary and improved working conditions) [13]. Some of these relate exclusively to inter-organizational turnover. Others, such as nursing salary, do not apply to Israel where it is based on union agreements.

Since this is a secondary analysis study, only variables measured in the initial study were entered into the regression equation, most of them are known as having a correlation with turnover. The fact the model explained only 2% of internal turnover, may suggest that it is a different phenomenon or is associated with different variables compare to external turnover. Predictors related to the nurses life style and or the desire for professional development and advancement, should be considered in further research. Studies should focus on the personal aspects of nurses seeking other working units to fulfill either their desire for balance between work or home, or fulfilling career to accomplish professional values.

The vast majority of studies found a strong correlation between work-related stressors and nurses' turnover or dropout from the profession. Most of the stressors that were identified as a main reason for leaving an organization were lack of peer support, little managerial support, role ambiguity and conflict [24, 34]. This study found different work-related stressors, associated with salary, physical and verbal violence, workload, too much paperwork and a lack of professional opportunity. However, most departments and units in the study had a small number of nurses that moved from one place to another (see Table 3). We could therefore not assess and statistically compare departmental stressors or examine the relationship between stressors and nursing turnover within hospitals. Since the stressors identified in the study were general and common to most departments and units, it

is reasonable to assume that other variables – unrelated to job stressors and omitted from the study – contribute to internal turnover. In order to identify them, further investigation is required.

Implications for management

Employers should consider workers as assets and expect the investment in their skills and knowledge to yield returns in the form of commitment and productivity over time.

Employers need to be attentive to their employees in order to understand their personal and professional needs, and the reasons cause them to stay or leave their working units. This focus may yield a better managerial understanding of the personal reasons to move, and produce a targeted managerial effort to accommodate and improve the nursing working environment.

Special importance should be given to nursing retention programs. These programs are needed to increase nurses' satisfaction in their working units based on specific knowledge on nurses' needs.

The policy to absorb only nurses with post-basic education in special units results in inevitable turnover in Israeli medical–surgical departments. This trend warrants attention and should be investigated more closely to identify factors that would enrich the nursing environment in these departments, and accommodate nurses' personal and professional requirements, creating a work environment which appreciates the importance of long-term professional growth and development.

Conclusion

Since most internal turnover takes the direction out of general departments to specific domains, it is vital to plan the initial absorption of nurses to these departments. Moreover, it is important to create conditions to retain quality personnel, and enhance staff self-esteem and collaboration in these departments. Internal turnover in these departments requires continuous monitoring.

Although the study could not establish a significant correlation between turnover and job stressors, management should address the high turnover rate in these departments and monitor the nurses' satisfaction, intention to leave, and sense of burden and burnout.

Finally, it would be valuable to assess internal turnover in different countries based on current nursing policy and the nursing workforce.

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