

Explanation of Children's Health through Parents' Mental Health and Job Satisfaction by Structural Equation Modeling

Majid Golzarpour¹, Meroe Vameghi¹, Homeira Sajjadi¹ & Gholamreza Ghaedamini Harouni¹

¹ Social Welfare Management Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

Correspondence: Meroe Vameghi, Social Welfare Management Research Center, University of Social Welfare and Rehabilitation Sciences, Koodakyar Alley, Daneshjoo Blv, Velenjak, Tehran, Iran. Tel: 98-91-2336-6200. E-mail: m_vameghi@yahoo.com

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Abstract

Background: Worldwide, much evidence exists on the influence of parents' socioeconomic conditions, including employment, on children's health. However, the mechanisms for this affect are still being investigated. Few studies have been conducted in Iran to investigate this issue. This study investigated working conditions, job satisfaction, and mental health of employed people and the association between these variables and their children's health.

Materials and Methods: In this correlational work, 200 male and female staff of the official part of Educational Organization and the schools of Mashhad with children aged 5-18 years was randomly selected. The data were gathered using a demographic questionnaire, the 20-item Minnesota Job Satisfaction Questionnaire, the 28-item General Health Questionnaire, and the 28-item Child Health Questionnaire. The data were then analyzed using SPSS. The associations under study were investigated by structural equation modeling in AMOS.

Results: Approximately 17% of the variation in the parents' job satisfaction could be explained by the parents' insurance, income, and work hours; 6% of the variation in their mental health was explained by job satisfaction, and 26% of the variation in children's health was directly explained by the parents' job satisfaction and mental health. However, approximately 32.2% of the variation in children's health could be explained in the light of the direct effect of the parents' mental health and direct and indirect effects of the parents' job satisfaction. The goodness of fit index was 0.94.

Conclusion: Parents' job satisfaction was associated with and considerably explained children's health. Although this finding may be partially related to the job satisfaction effect on mental health, the reasons for the affect of job satisfaction on children's health and the potential mechanisms of this association require further studies.

Keywords: job satisfaction, parental mental health, children's health, parents' working conditions, structural equation modeling

1. Introduction

Recently, socioeconomic status has been recognized as one of the most important effective factors on health and has become increasingly important (Birch & Gafni, 2005; CCSDH, 2015; Schneider et al., 2002; WHO, 2015). Since 2005, the World Health Organization (WHO) has emphasized that investigating the social determinants of health is a research priority for healthcare (Ahmed, Tomson, Petzold, & Kabir, 2005). Employment is an important socioeconomic factor effecting health and is highly important because of its association with many domains in life (Hadadi, Kaldi, Sajjadi, & Salehi, 2011). In addition to employment, job characteristics also affect life and health. These characteristics may include job security, income, working hours, vacation, and insurance facilities, collectively referred to as working conditions (Jeong, 2012).

Many studies have investigated job satisfaction and working conditions, reporting job satisfaction to be a highly effective factor on productivity and quality of work (Makowiec-Dąbrowska et al., 2008; van den Berg et al., 2008). Job satisfaction is a multidimensional concept that can be considered an overall feeling towards a job or an interrelated collection of attitudes towards different aspects of a job (Adams & Bond, 2000). Using the most

common instruments of job satisfaction measurement, Spector summarized different dimensions of job satisfaction as follows: being appreciated, relationships, colleagues, fringe benefits, working conditions, nature of work, nature of organization, organizational policies and processes, salary, personal growth, raise opportunities, positive feedback, job security, and supervision (Lu, While, & Barriball, 2005).

Job satisfaction may be associated with job output (Pugno & Depedri, 2010), job intervention in family life (Grandey, Cordeiro, & Crouter, 2005), burnout and leaving the job (Arches, 1991; Ramoo, Abdollah, & Piaw, 2013), and job dynamics (Kristensen & Westergård-Nielsen, 2004). In addition, some research has demonstrated that the people who are dissatisfied with their jobs are more likely to experience adverse health outcomes, such as mental health problems (Hobbi, Moghaddasi, Hatami, Abadi, & Anisi, 2011; Kaheh & Heivadi, 2012) and develop cardiovascular diseases, chronic headaches, and other diseases (Harandi & Borjali, 2005). A systematic review of 485 articles indicated that job satisfaction was mostly associated with psychological problems, such as depression, self-esteem, and anxiety, and was less associated with physical illnesses (Faragher, Cass, & Cooper, 2005).

Working conditions affect health. Additionally, some studies have demonstrated a direct, significant association between working conditions and the health status of family members, including children (Parcel & Menaghan, 1994; Vandell & Ramanan, 1992; Yetis-Bayraktar, Budig, & Tomaskovic-Devey, 2013). Parents' poor socioeconomic status, including employment, may affect children's health and development, which is an important health factor over the course of the entire lifetime and potentially influences both childhood and adulthood (Ruijsbroek et al., 2011).

Out of different dimensions of parents' employment, income, working hours, and vacation have been investigated more frequently compared to other dimensions. For example, Case et al. found that parents' full-time jobs caused an increase in family income and promotion of the children's health, and lower income levels led to poorer health outcomes (Case, Lubotsky, & Paxson, 2001). In addition, Han and Waldfogel demonstrated that children, aged 10-14 years, of mothers with rotational shift work were more likely to commit delinquent acts and have behavioral problems at school (Han & Waldfogel, 2007). A critical review of 23 studies reported significant associations between nonstandard work schedules and adverse child developmental outcomes (Li et al., 2013). Han and Miller found that parents' non-standard shift work, such as night work and irregular working hours, could increase the risk of depression, particularly among children (Han & Miller, 2009).

Moreover, an investigation of the data from 16 European countries between 1969 and 1994 indicated that giving more paid vacation time was associated with decreased mortality among infants and children. In particular, the most robust negative association was derived between vacation duration and post-neonatal mortality compared to prenatal mortality, infant mortality, and low birthweight (Ruhm, 2000).

Additionally, some studies have confirmed that mental health of parents, especially mothers, affects children's health. The WHO reported that in developing countries, mothers' depression is associated with more frequent admission to neonatal care units, incidence of diarrheal diseases, decreased vaccination completion for children, and poorer physical, cognitive, social, behavioral, and affective development of infants (UNFPA, 2008). A cohort study in Australia demonstrated that prepartum depression signs were predictors of a poorer health status in the early years of childhood, which is a predictor of depression in adulthood because of increasing health-related stresses in early adulthood (Raposa, Hammen, Brennan, & Najman, 2014).

In Iran, job satisfaction and its association with health, particularly mental health, have been frequently investigated. Some of these studies found a significant association between some or all dimensions of job satisfaction and health (Bakhshayesh, 2013; Banihashemiyani et al., 2012; Habib & Shirazi, 2003; Hobbi et al., 2011; Kaheh & Heivadi, 2012; Rasoli & Eslamy, 2013; Saberi et al., 2009; Sepah Mansour et al., 2012). However, very few studies have investigated the association between parents' working conditions or job satisfaction and children's health to date. One study found a positive, significant correlation between military personnel's job satisfaction and their wives' and children's mental health (Hobbi, Moghaddasi, Hatami, AzadmarzAbadi, & Anisi, 2011). Moreover, other studies found significant associations between burnout among nursing mothers (Shoushtari, Arabgol, Aldin, & Elahi, 2004), as well as an association between the lack of a constant presence of fathers at home because of working far from home and children's behavioral problems (Shahgholian, 2008).

In addition to the limited number of studies on this issue, reasons for the association between the parents' job characteristics and satisfaction with children's health and the role of potential moderators have not yet been studied. This study was conducted to investigate this association and the role of parents' mental health using structural equation modeling (SEM) in a cohort of employees with different job categories in an organization.

2. Materials and Methods

Study design and study population

In this correlational work conducted in 2015-2016, the study population consisted of all male and female employees of the Education Organization and the schools of Mashhad who had children aged 5-18 years.

3. Sample Size and Sampling

Sample size was determined using a typical method for correlational studies. According to previous works, the desirable correlation coefficient was considered 0.3, the 95% confidence interval was 96.1, and 0.84 with beta was 0.2. Accordingly, the sample size was determined to be 85 people (Rafiey et al., 2008). In light of including two groups, one of men and one of women, and to account for potential dropouts (Rafiey et al., 2008), the final sample size needed was 200 people. Stratified, random sampling was adopted for this study.

In this study, gender was considered the stratum of the study. First, four education districts were selected from 13 education districts across Mashhad using a simple random sampling technique. Then, one girls' school and one boys' school were randomly selected from each district and sampling was done in the education organizations and the selected schools of the four education districts under study. The inclusion criteria were: being employed by the Education Organization or schools of Mashhad and having at least one child aged 5-18 years. If the participants had a disabled or critically ill child or did not live with their child, they were excluded from the study.

4. Methods of Gathering Data and Instruments

To investigate demographic characteristics and working conditions of the parents, a relevant questionnaire was used. To measure job satisfaction, the 20-item Minnesota Job Satisfaction Questionnaire was administered. The parents' mental health was measured using the General Health Questionnaire (GHQ-28) and the children's health status was assessed with the 28-item Child Health Questionnaire. After the Education Organization and the parents provided the required consent to gather the data, the researchers administered the job satisfaction and child health questionnaires to the parents with at least one child aged 5-18 years. The parents with more than one child aged 5-18 years were asked to fill out the questionnaires for only one of them. The questionnaires were anonymous and the parents were told that they were free to end their participation at any time.

5. Demographic and Working Conditions Questionnaire

This questionnaire consisted of 18 questions to investigate demographic characteristics and working conditions consisting of work experience, working hours per week, monthly income, type of basic insurance (healthcare services, social insurance), and the presence or lack of supplemental insurance coverage.

6. Questionnaire GHQ-28

Goldberg and Hillier developed the 28-item GHQ-28 in 1972 (MasoudZadeh, Khalilian, Ashrafi, & Kimia Bigi, 2004). This questionnaire was administered to investigate the parents' general health. Each item is scored using a four-point (0-3) scale, with the total score ranging from 0 to 84. The cut-off point is considered 9 for subscales (physical signs, anxiety, social dysfunction, and depression) and 23 for the whole questionnaire. The lower the score, the better the general health status (MasoudZadeh, Khalilian, Ashrafi, & Bigi, 2004). This questionnaire has already been validated in the Tehran Psychiatric Institute (Harouni, Boroujeni, Jafari, & Boroujeni, 2014). The reliability of the whole questionnaire and the subscales of physical signs, anxiety, social dysfunction, and depression was 0.91 and 0.87, 0.89, 0.88, and 0.79, respectively.

7. Minnesota Job Satisfaction Questionnaire

Weiss et al. developed the Minnesota Job Satisfaction Questionnaire with one short 20-item version and two long 109-item versions (Weiss, Dawis, & England, 1967). In this work, the short version was used. This questionnaire is based on the presupposition that job satisfaction or dissatisfaction is a part of a bipolar continuum and measures job satisfaction by aggregating the scores of two subscales, intrinsic and extrinsic satisfaction (Aqda et al., 2013). The items of this questionnaire are scored using a Likert scale with minimum and maximum scores of 20 and 100, respectively. The scores 0-47 represent low job satisfaction, 48-76 moderate job satisfaction, and 77-100 high job satisfaction (Weiss, Dawis, & England, 1967). In this study, Cronbach's alpha was 0.845, 0.837, and 0.897 for intrinsic satisfaction, extrinsic satisfaction, and the whole questionnaire, respectively.

8. 28-Item Child Health Questionnaire

Landgraf and Abetz developed the Child Health Questionnaire. There are four versions, one self-administered 87-item version and three 28, 50, and 98-item versions, which are administered to parents with children aged

5-18 years (Landgraf & Abetz, 1996). In this study, the 28-item version was used. This questionnaire consists of 13 subscales that generally measure physical health (physical functioning or problems and limitations, general health, and bodily pain) and psychosocial health (social, affective-behavioral limitations, self-esteem, mental health, behavior, and family problems; Drotar, Schwartz, Palermo, & Burant, 2006).

The 28-item version of this questionnaire is scored using a Likert scale with minimum and maximum scores of 28 and 133, respectively, according to the minimum and maximum scores and the number of items on each subscale. The validity of this questionnaire has already been confirmed (Gharehbaghy & Vafaie, 2007). In a study on students in Iran, Cronbach's alpha was reported to be 0.70 and 0.85 for physical and psychosocial health, respectively (Gharehbaghy & Vafaie, 2007). In addition, Golzarpour et al. investigated the validity of this questionnaire.

In this study, using a first-order factor analysis, 22 questions remained in the light of factor loads and goodness of fit indices (GFI=0.885, CFI=0.925, RMSEA=0.056). In the second-order factor analysis (GFI=0.869, CFI=0.907, RMSEA=0.06), it was found that the items of the questionnaire could be integrated. Moreover, total internal consistency was reported to be 0.851 via a Cronbach's alpha and ICC 0.751 after modifications, which are acceptable coefficients (Golzarpour, Vameghi, Sajjadi, & Harouni, 2016).

For modeling investigations, SEM was used in AMOS 22. The research model consisted of three latent variables, job satisfaction, general health, and child health. To assess the model, normalized chi-square (χ^2/df) and root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), and comparative fit Index, were used. Non-significant values of (χ^2/df), RMSEA<0.80, CFI>0.90, and GFI>0.90 represented acceptable GFI of the model. The significant path coefficients were investigated using critical ratio and standard error (Ghassemie, 2014).

9. Results

Table 1 shows the demographic characteristics of the parents and the children on whom their parents filled out the health questionnaire. It also illustrates the parents' working conditions, including mean work experience, working hours, income, and basic and supplemental insurance.

Table 1. Distribution of demographic characteristics in the participants

Demographic characteristics	Mean	Standard deviation
Age	No.	%
Parents	41.5	5.9
Children	11.5	4.2
Child's gender	No.	%
Female	104	52
Male	96	48
Parent's gender	No.	%
Female	101	50.5
Male	99	49.5
Parent's educational level	No.	%
Elementary	6	3
Secondary	17	8.5
High school	17	8.5
Associate degree	18	9
BSc/BA	107	53.5
MSc/MA	32	16
PhD	3	1.5
Total	200	100

9.1 Parents' Working Conditions, Job Satisfaction, and Mental Health

Table 2 shows the parents' job satisfaction and mental health.

Table 2. Parents' working conditions, job satisfaction, and mental health

Scale	Subscales	Mean	Standard deviation	Maximum	Minimum
Mental health	Job satisfaction	64.77	14.1	98	20
	Somatization	8.68	4.42	20	0
	Anxiety and sleeplessness	8.35	5.09	21	0
	Social dysfunction	11.52	4.63	21	0
	Depression	3.15	4.04	20	0
	Total score	31.70	13.35	73	0
	Work experience (year)	30	3	18.43	6.96
Work conditions	Working hours a month	48	18	38.84	6.42
	Monthly income (Rials)	30,000,000	6,000,000	13,000,000	4,000,000
	Insurance status	Being covered by social insurance 143(71.5%)		Being covered by supplemental insurance 102(51%)	

Given the mean total score (64/77) and minimum and maximum scores (20 and 100, respectively) of job satisfaction, the job satisfaction of the staff of the Mashhad Education Organization was acceptable (Table 2). Furthermore, regarding the determined cut-off points, 8% of the staff had low levels of job satisfaction, 74% moderate levels, and 18% high levels.

The parents' mean total score of general health and mean scores of each subscale of general health are shown in Table 2. According to the cut-off point of the administered questionnaire, 41.5% of the parents had somatization problems, 38.5% anxiety, 59% social dysfunction, and 8.5% depression. According to the total scores, 68% of the parents had low general health levels.

9.2 Children's Health Status

For all subscales, the closer the mean scores to the maximum score, the better the health status. In the light of the children's mean scores of each subscale of general health and total scores of general health, and minimum and maximum scores of the administered questionnaire (Table 4), the children had a relatively acceptable health status in all subscales and on the whole.

Table 3. Descriptive indices of children's health

Domains/total score	Mean	Standard deviation	Minimum	Maximum
Children's mental health	18.16	3.55	5	25
Self-satisfaction	12.02	2.23	3	15
Children's activity status	10.12	2.37	4	12
Children's performance	14.67	3.08	4	18
Parents' worry	7.15	2.43	2	10
Parents' limitations	5.75	2.98	2	10
Children's general health	11.37	2.04	5	15
Total score on Child General Health Questionnaire	79.25	11.6	47	105

9.3 Investigating Theoretical Model of Research

Figures 1 and 2 illustrate the findings on the research model. According to the first model, including most of the studied variables, approximately 15% of the variation in the parents’ job satisfaction could be explained by income, working hours, and insurance, 10% of the variation in the parents’ general health could be explained by job satisfaction, and 27% of the variation in the children’s health could be explained by the parents’ job satisfaction and general health.

In the light of the findings, the association of the parents’ job satisfaction was negative with their general health and positive with the children’s health. Table 3 shows regression coefficients, the significance of each coefficient, and GFIs of the first model. The GFIs indicated that this model had a relatively acceptable goodness-of-fit.

However, the effects of some of the studied variables were not significant on the parents’ job satisfaction and therefore the variable Insurance2 (being or not being covered by supplemental insurance) and the association of some variables with mental health were removed because of being non-significant. In addition that, the effective variables on job satisfaction were correlated (Figure 2).

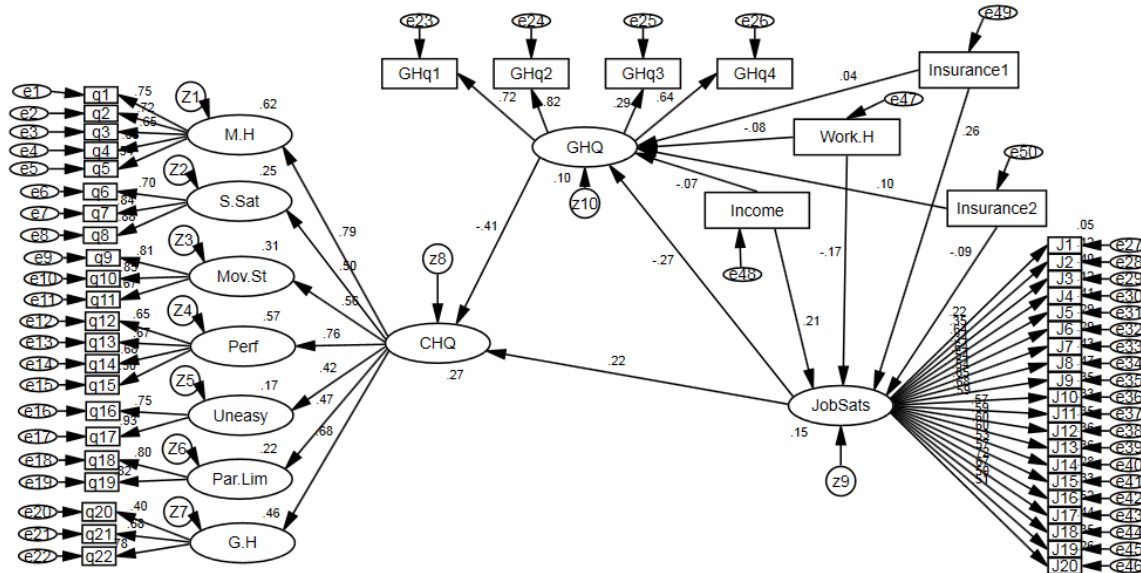


Figure 1. First research model based on primary theoretical fundamentals

Note: M.H; children’s mental health, S.Sat; self-satisfaction, Mov.St; children’s movement status, Perf; children’s performance, Uneasy; parents’ worry, Par Lim; parents’ limitations, G.H; children’s general health, GHQ; whole Child Health Questionnaire, GHq1; physical problems, GHq2; anxiety and sleeplessness, GHq3; social dysfunction, GHq4; depression, GHQ; general health, Insurance1; being or not being covered by social insurance, Insurance2; being or not being covered by supplemental insurance, Work.H; working hours, Income; income, JobSats; job satisfaction.

According to the second (final) research model, approximately 17% of the variation in job satisfaction could be explained by insurance status, income, and working hours, 6% of the variation in children’s mental health could be explained by job satisfaction, and 26% of the variation in children’s health directly could be explained by the parents’ job satisfaction and mental health.

Job satisfaction both directly and indirectly affected children’s health. The direct effect was 0.22, the indirect effect was 0.103 $[(-0.14) \times (-0.25)]$, and the total effect of job satisfaction was 0.323 $[(0.14 \times 0.25) + 0.22]$ on the children’s health.

More clearly, given the direct effect of the children’s mental health and the direct and indirect effects of the parents’ job satisfaction, about 32.3% of the variation in the children’s health were explained. The association of job satisfaction was negative with the children’s mental health and positive with the children’s health.

Regression coefficients, the significance of each coefficient, and the GFIs of the modified model are shown in Table 3. As the GFIs indicate, after elimination of the variable Insurance2 from the first model and some of the associations, and development of correlations among effective factors on job satisfaction, first, GFIs improved

and second, no change was seen in determining coefficients, which confirms that the second (improved) research model is economical.

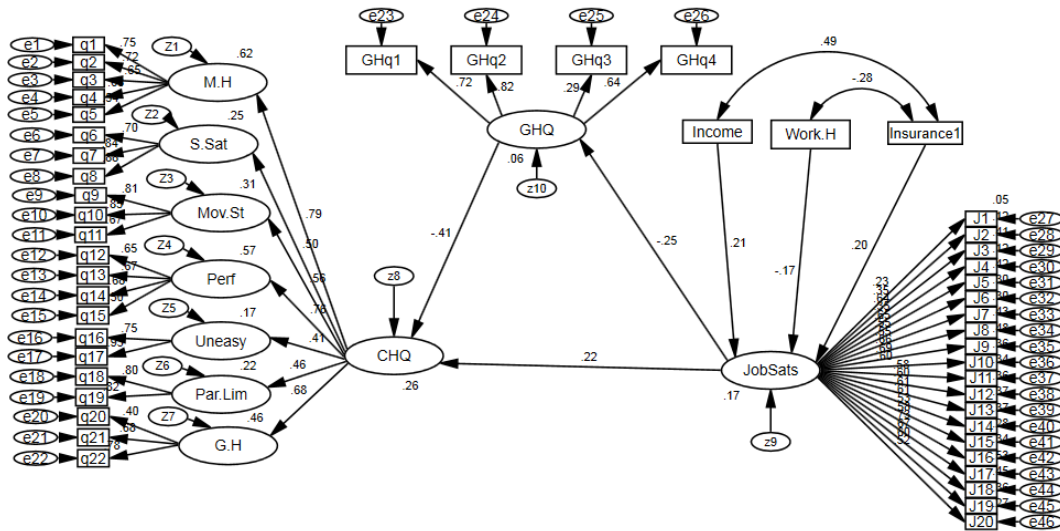


Figure 2. Primary research model after elimination of variables and insignificant associations from the first model

Table 3. Regression weights, the significance of each coefficient, and determining coefficients for the first and second research model

Model	D.Vs.	I.Vs.	Estimate	S.E.	C.R.	B	P	R ²
Model1	JobSats	Income	.000	.000	2.176	.209	0.030	0.15
		Work.H	-.008	.004	-1.967	-.175	0.049	
		Insurance2	-.052	.044	-1.195	.089	0.232	
	GHQ	Insurance1	.167	.070	2.399	.259	0.016	0.10
		Work.H	-.041	.039	-1.055	-.082	0.291	
		Income	.000	.000	-.867	-.068	0.386	
		JobSats	-2.969	1.370	-2.167	-.270	0.030	
CHQ	Insurance2	.641	.493	1.299	.100	0.194	0.27	
	Insurance1	.258	.565	.457	.036	0.648		
Model2	CHQ	GHQ	-.060	.016	-3.816	-.413	0.000	0.26
		JobSats	.345	.177	1.955	.217	0.05	
	JobSats	Income	.000	.000	2.14	.205	0.045	0.17
		Work.H	-.008	.004	-2.88	-.168	0.04	
		Insurance1	.131	.068	1.94	.203	0.05	
GHQ	JobSats	-2.663	1.224	-2.17	-.249	0.030	0.06	
	CHQ	-.060	.016	-3.82	-.412	0.000		
		JobSats	.345	.173	1.99	.221	0.046	

Goodness of fit indices: CMIN/Df= 1.87, GFI=0.895, CFI= 0.890, RMSEA= 0.066

Goodness of fit indices: CMIN/Df= 1.75, GFI=0.940, CFI= 0.901, RMSEA= 0.062

Note. D.Vs= Dependent variables, I.Vs= Independent Variables, C.R= Critical ratio.

10. Discussion

Health experts have recently investigated working conditions and their associations with staff health. In addition, parents' working conditions are associated with not only their own but also their family members' health (Parcel & Menaghan, 1994; Vandell & Ramanan, 1992; Yetis-Bayraktar et al., 2013). In a review of the relevant research

conducted in Iran, we found no study specifically investigating the association between working conditions and parents' job satisfaction, and children's health, nor does anything study on how these variables are associated with each other.

In this study, to investigate the association among working conditions, the parents' job satisfaction, and children's health, the parents' mental health was also analyzed in the model as a mediating variable. Based on the final research model, the variables of working conditions, including income, being covered by supplemental insurance and working hours, were not significantly associated with job satisfaction, and 17% of the variation in job satisfaction was explained by these three variables of working conditions.

According to the findings from the first research model, none of the variables of working conditions and the parents' mental health were associated, while in both research models, job satisfaction was significantly associated with the parents' mental health, and according to the second research model, job satisfaction explained about 6% of the variation in the parents' mental health.

Faragher et al.'s study demonstrated that job satisfaction was strongly associated with mental problems and mostly correlated with depression, followed by self-esteem and anxiety (Faragher, Cass, & Cooper, 2005). In addition, the studies conducted in Iran found that the association between job satisfaction and health, especially mental health (Banihashemiyani et al., 2012; Habib & Shirazi, 2003; Hobbi et al., 2011; Kaheh & Heivadi, 2012; Rasoli & Eslamy, 2013; Saberi et al., 2009; Mansour et al., 2012), was significant in some or all of the dimensions of job satisfaction and health. The parents' job satisfaction was directly and significantly associated with the children's health in the final model and directly explained approximately 4% of the variation in the children's health. Moreover, job satisfaction explained approximately 16% of the variation in the children's health indirectly through the parents' mental health. Additionally, the direct effect of job satisfaction on the children's health in addition to its indirect effect on the children's health through the parents' mental health explained 26% of the variation in the children's health. According to the final research model, about 17% of the variation in job satisfaction could be explained by insurance status, income, and working hours, 6% of the variation in the parents' mental health by job satisfaction, and 26% of the variation in the children's health directly by job satisfaction and the parents' mental health. According to the final model, job satisfaction affected children's health not only directly but also indirectly, and given the direct effect of the parents' mental health and direct and indirect effects of the parents' job satisfaction, approximately 32.2% of the variation in the children's health was explained. These findings indicate that parents' job satisfaction can affect their children's health, and job satisfaction affects children's health both indirectly, through variations in parents' health, and directly. In addition, job satisfaction, per se, may affect some of the working conditions of parents.

Previous evidence indicates that job satisfaction is associated with employees' health, particularly mental health (Habib & Shirazi, 2003; Kaheh & Heivadi, 2012) on the one hand, and parents' mental health is definitely associated with children's health on the other hand (Hobbi et al., 2011; Kaheh & Heivadi, 2012).

Furthermore, some recent investigations have demonstrated an association between psychological effects of employment and children's health. Obviously, mental and physical health is considered an asset for parents to communicate with and care for their children, because it affects both the children's development and the family processes (Barnett et al., 2008; Davis et al., 2008; Han, 2008). Fatigue due to insufficient sleep and stress due to inappropriate working conditions can influence parenting and the time spent with children to do important activities.

The stress due to non-standard work schedules can adversely affect family dynamics and family and child cohesion (Barnett et al., 2008; Davis et al., 2008; Han, 2008). Studies have demonstrated that parents' stress at work affects the quality of family interactions, thus affecting children's and adolescents' adaptation (Crouter & Bumpus, 2001). In addition, mothers' stress at work may affect child development through decreasing maternal care (Felfe & Hsin, 2012).

Despite the significance of parents' working conditions and the effects on children's health as an important social determinant of health in international databases, this issue has not yet been investigated adequately in Iran. Given the findings of this study, future studies are recommended to investigate this association as well as the mechanisms by which working conditions influence different socioeconomic classes.

One important limitation of the study is the sole dependency on the parents' report about their children's health status. Thus, future studies could assess children's health through children's self-report. Moreover because of insufficient sample size, assessment of the association between variables in different occupational groups was not possible. Additionally, it is presumed that more variations in parental education status may show different results.

11. Conclusion

Overall, regarding the findings of this study, we can argue that parents' job satisfaction is associated with and can largely explain children's health. Although this can be partially related to job satisfaction's effect on mental health, the potential mechanisms explaining the direct affect on children's health directly require further investigations.

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Competing Interests Statement

The authors declare that there is no conflict of interests regarding the publication of this paper.

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