Health insurance satisfaction, financial burden, locus of control and quality of life of cancer patients: a moderated mediation model

Received 13 October 2019
Revised 31 May 2020
Accepted 10 December 2020

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Abstract

Purpose – The purpose of this paper is to examine the relationship between consumers' satisfaction with their health insurance and quality of life (QoL), the mediating role of perceived financial burden in this relationship, as well as the moderating effect of external locus of control (LoC) on the relationship between perceived financial burden and QoL among cancer patients.

Design/methodology/approach – A cross-sectional design was employed in order to collect quantitative data by means of a self-administrated questionnaire. Participants consisted of 387 conveniently selected consumers diagnosed with cancer in Iran. Furthermore, the questionnaire was translated into Persian using a forward–backward method. The model was tested using partial least squares structural equation modeling (PLS-SEM).

Findings – The results indicate that the more satisfied patients are with their health insurance, the higher QoL they experience, and this relationship is explained through reducing perceived financial burden in terms of direct and indirect costs of the disease. Although external LoC belief is negatively related to QoL, it buffers the negative association between financial burden and QoL.

Practical implications – Reducing the disparity between consumers' expectation and perception of the comprehensiveness of health insurance policies may relieve consumers' anxiety stemming from financial worries.

Originality/value – This paper fills a gap in the literature where consumers' perception about quality of insurance and its relationship with their QoL has received little attention so far.

Keywords Financial behavior, Financial burden, Insurance satisfaction, Locus of control, Quality of life, Cancer

Paper type Research paper

Introduction

In the neoclassical theory of consumer, maximizing individual consumer's utility is seen as the primary objective, which is typically defined as enjoyment or pleasure derived from consumption (Nixon, 2007). Roback (1982), Andreoli and Michelangeli (2014) and Yonk and

International Journal of Social Economics

0306-8293
DOI 10.1108/IJSE-10-2019-0629

Smith (2018) based the quality of life (QoL) concept on utility maximizing theory in a way that QoL is perceived as a value individuals attempt to maximize as part of their overall utility function. While maximizing QoL is something worth pursuing, individuals often face challenges or shocks in life. Achieving desired QoL appears more critical when a consumer receives a health shock and consequentially faces an unexpected financial burden. This may occur when a consumer is diagnosed with a chronic disease like cancer and must endure the physical, emotional and financial pressures associated with treatment and living with the potentially fatal disease. Even though cancer survival rate has improved in the era of a steady flow of technological advancements (Novella, 2019), physical and psychological burden of cancer diagnosis and treatment persists long after the final therapy session for the patients and families. Consequently, cancer is not simply a medical condition as the treatment must address consumers' social, emotional and spiritual well-being, all of which are different aspects of QoL.

For cancer patients, financial hardship is not limited to medical cost (cost of medical diagnosis and treatment) but also comprises the nonmedical cost such as traveling to medical center or loss of employment and revenue (Mcnulty and Khera, 2015). Health insurance helps consumers in increasing their satisfaction with the financial wavier gained from the insurance policy; it can also diminish satisfaction if expected services are not covered by insurance (Kaplan *et al.*, 2017). While health insurance appears to ameliorate the burden and hence having a positive impact on QoL, the actual situations faced by cancer patients may not be so straightforward. There is a third-factor effect such as locus of control (LoC) that could influence QoL. LoC is increasingly being recognized as a critical factor for improving QoL among consumers with chronic diseases (Pahlevan Sharif, 2017). Indeed, the current study suggests that external LoC and financial burden play an intervening role in influencing QoL. Consumers' LoC could determine how well they cope with the ensuing difficulties. Consumers with a high level of external LoC perceive their own action to be a small contributor in their health, treatment and overall QoL (Pahlevan Sharif, 2017).

Factors affecting QoL of consumers dealing with cancer have been extensively studied (Finck *et al.*, 2018; Shin *et al.*, 2019), and similarly, there is ample body of literature focusing on the health insurance itself (Geng *et al.*, 2018; Greß and Wasem, 2017; Mahapatro *et al.*, 2018). However, the relationship between consumers' satisfaction with their health insurance and their QoL has received little attention from researchers so far. What has predominantly been studied in this regard is the relationship between health insurance and health status (Short and Lair, 1994; Gu *et al.*, 2017; Sommers *et al.*, 2017; Celhay *et al.*, 2019, Mcwilliams *et al.*, 2004). These studies have coherently indicated that expanding health insurance coverage improves health outcomes to varying degrees. However, research has indicated that apart from quantity of survival, QoL is equally as important for cancer patients (Cella, 1995). While Gu *et al.* (2017) extended their research to the realm of life satisfaction associated with health insurance among the elderly, their research did not incorporate dispositional factors associated with health insurance (i.e. health insurance satisfaction). This is an important consideration especially for cancer patients, given that dispositional factors associated with cancer can have implications for health behavior (Jensen *et al.*, 2010). However, such research efforts have primarily been divested away when it comes to health insurance-related research.

The health-care sector in Iran is unique in the sense that the government is responsible for providing primary care to individuals from all sectors (Khangah *et al.*, 2017). More than 90% of Iranians are under the coverage of any of the four main public health insurance organizations providing "basic" health insurance packages. In addition, around eight percent of people pay a premium to benefit from "supplementary" packages provided by private organizations (Nouraei Motlagh *et al.*, 2015). However, due to the inefficiency of the

insurance packages, out-of-pocket payments are growing increasingly (Mehrdad, 2009; Marnani *et al.*, 2012). Furthermore, the economic sanctions placed on Iran have had a detrimental impact on the acquisition of drugs and medical equipment required for cancer treatment (Pahlevan Sharif *et al.*, 2018). Given that cancer is the third leading cause of mortality in Iran (Mehrdad, 2009; Dowran *et al.*, 2019) accompanied with aforementioned challenges, investigating the role of health insurance in the QoL of cancer patients becomes of high importance. Subsequently, the current study aims to examine (1) the relationship between health insurance satisfaction and QoL, (2) the mediating role of financial burden in the relationship between health insurance satisfaction and QoL and (3) the moderating effect of external LoC on the financial burden–QoL link among consumers diagnosed with cancer.

Literature review

According to Grossman (2000), health affects utility directly and indirectly through individual's earnings, which are in turn influenced by health, as a determinant of one's ability to participate in the labor market. An individual's health itself is a function of initial stock of health capital, depreciation and investment in health (Chiteji, 2010). Chronic disease is considered as depreciation, while adoption of a healthy lifestyle or having health insurance would be considered as an investment in health. Thus, it can be said that health insurance as an investment would affect QoL. We can further claim that one of the precautionary measures is the purchase of health insurance to protect consumption in case of health shocks. Indeed, health insurance is widely viewed as a smoothening consumption buffer to improve health-seeking behavior (Geng *et al.*, 2018), and it is a replacement for costly smoothening mechanisms (Liu, 2016) that in turn will increase consumer's utility and hence, QoL.

Müller and Woitalla (2010) argued that various types of insurance influence QoL of patients living with chronic disease differently. For example, Penson *et al.* (2001) found that relative to a private insurance provider, individuals enrolled in the national health insurance program in the USA (i.e. Medicare), as well as those without any insurance tend to experience worse QoL following treatment for prostate cancer. Likewise, a study conducted in Germany showed that obligatory health insurance improves QoL among Parkinson's patients. Obligatory health insurance offers Parkinson's patients' job warranty, disability insurance and retirement pay, which in turn improve their QoL (Müller and Woitalla, 2010).

While above discussion supports the nexus between insurance and QoL among consumers facing a chronic disease, this study seeks to investigate this relationship from consumers' perception angle. To do so, the current research examines insurance satisfaction rather than focusing on the insurance itself or monetary coverage. This study investigates whether there exists a relationship between consumers' satisfaction with their health insurance and their QoL.

Therefore, the first hypothesis is

H1. Health insurance satisfaction is related to QoL.

Mediating role of financial burden

A negative health shock – in the context of this research, a cancer diagnosis – can impose two types of cost on consumers: treatment-related cost and the costs of reduced work productivity. Findings yielded by several studies conducted in different countries (Garg and Karan, 2008; Yardim *et al.*, 2010; Gotsadze *et al.*, 2009, Wagstaff and Van Doorslaer, 2003) indicate that health-care services (diagnosis and treatment) are expensive to the consumers,

thus imposing heavy financial burden on their households. Financial burden not only worsens the economic status (Yardim *et al.*, 2010; Garg and Karan, 2008) but may also cause treatment discontinuation, especially in low-income households. In addition, it negatively impacts life of patients and their family members.

Health insurance helps to reduce the catastrophic medical expenditure of chronic disease treatment, smoothens the consumption and in turn improves QoL (Geng *et al.*, 2018; Yardim *et al.*, 2010; Goldman and Zissimopoulos, 2003). While there are many claims of the advantages of insurance coverage on personal finance, in contrast, there are several studies that showed the ineffectiveness of health insurance on reducing out-of-pocket expenses for consumers (Wagstaff *et al.*, 2009). In fact, there is no evidence to support the relationship between insurance and financial burden (Xu *et al.*, 2007; Acharya *et al.*, 2013). While the results on the effect of insurance on out-of-pocket costs are inconsistent, research findings supporting the negative impact of financial burden on QoL are ubiquitous. Mcnulty and Khera (2015) assert that financial burden can result in treatment nonadherence and lifestyle changes for the consumers fighting with a chronic disease and that impacts their QoL negatively. Treatment nonadherence, which is introduced as a potential deleterious health behavior (Mcnulty and Khera, 2015) can range from total forgoing of medical care to switching treatment from efficient to less-efficient treatment. Lifestyle changes can also vary from cutting the leisure activities or food to borrowing money from relatives and acquaintances and selling assets and properties (Khera *et al.*, 2014; Shankaran *et al.*, 2012; Goodwin *et al.*, 2013). Although in general insurance decreases the financial burden of patients, the coverage itself may be a factor as insurance does not cover every aspect of medical costs. These effects can be translated as higher psychological pressure which would decrease QoL among vulnerable consumers (Hamilton *et al.*, 2013; Fenn *et al.*, 2014).

The aforementioned findings suggest that financial burden potentially explains the relationship between health insurance satisfaction and QoL. Therefore, we hypothesize the following:

H2. Health insurance satisfaction is related to financial burden.

H3. Financial burden is related to QoL.

H4. Financial burden mediates the relationship between health insurance satisfaction and QoL.

Moderating role of locus of control

LoC is defined as the extent to which an individual believes that whatever he/she encounters in life is a consequence of his/her own actions. Those with attitudes toward a strong connection between their own actions and consequences are identified as having internal LoC, while individuals who believe that chance, luck and other people govern their life outcomes are considered as having external LoC (Heywood *et al.*, 2017). Internal LoC is mostly viewed as a positive trait that enhances productive capacity of individuals, whereas in some settings, opposite result is reported (see also: Noor, 2002; Peterson and Seligman, 1987). Some researchers have even found that maximum level of well-being is achieved with a bi-local expectancy (i.e. a mix of internal and external LoC, April *et al.*, 2012).

The way consumers perceive their sense of control over their life would have a profound influence on the impact of financial burden on QoL (Cheng *et al.*, 2013). While financial burden reflects the extent to which direct and indirect costs of treatment affect one's life, LoC involves expectations about financial burden influencing consumers' QoL. When financial burden negatively affects QoL, the intensity of such a drop in QoL varies according to consumers' perception about their control over life.

A large body of literature suggests that consumers with a high external LoC would be more demotivated and experience a lower level of QoL than those who believe that they have control over outcomes (i.e. internal LoC) (Pahlevan Sharif, 2017). From this perspective, consumers with an external LoC tend to be more passive when facing negative events (e.g. cancer) as they tend to believe that they might not have the ability to improve their life quality and their actions would not control the outcomes (Pahlevan Sharif, 2017). Hence, they are more likely to show a lower level of functioning than internal LoC counterparts (Sharif and Khanekharab, 2017). These individuals tend not to search for solutions to manage their financial resources, and they are less likely to use active coping strategies to mitigate the negative impacts of financial burden on their QoL than those with internal LoC (Pahlevan Sharif, 2017; Buddelmeyer and Powdthavee, 2016). Thus, it can be asserted that the relationship between financial burden and QoL is moderated by external LoC among consumers suffering from chronic diseases like cancer. In the context of this research, from this perspective, negative impact of financial burden on QoL would be mitigated among consumers with higher external LoC as they consider this negative outcome out of their control and strictly associated with expertise of doctors, destiny or luck.

Based on the above explanation, the third hypothesis is developed as follows:

H5. LoC is related to QoL.

H6. External LoC moderates the relationship between financial burden and QoL.

Methodology

A cross-sectional, questionnaire-based design was adopted. This study used the data from the *Financial Literacy of Cancer Patients*' project collected through two independent surveys in Iran. A self-administered questionnaire was used for data collection by means of a convenience sampling technique, and all participants were at least 18 years old. The data were collected from three different clinics and research centers from August 2018 to January 2019. All questions in the questionnaire were translated into Persian using a forward–backward method.

Sample size

In total, 407 samples of consumers diagnosed with cancer were obtained. The first survey had 223 samples, and the second survey collected 184 samples. After removing missing cases, a total of 387 samples were used for analyses. The results of power analysis indicated that the sample size is big enough to achieve the desired statistical power. We utilized *a priori* estimation for determining the sample size for several reasons. Firstly, *a priori* sample size estimation was conducted during the research planning phase, which yielded the minimum necessary participants in order to avoid type I or a type II error (see for example; Beck, 2013). Second, our sample size estimation was based on the recommended 80% chance of detecting true effects (Lenth, 2001; Cohen, 1992).

Most importantly, our sample was drawn from a representative sample (i.e. cancer patients in Iran) which allowed us to generalize our findings to the understudied population, as is advocated by researchers (Maleske, 1995). Given this consideration, a larger than required sample size in health services research has the potential to magnify unwarranted biases and effects that can compromise the generalizability of the results (Kaplan *et al.*, 2014). Finally, as a robustness check against our estimated sample size, we utilized the table of Krejcie and Morgan (1970). We additionally verified the appropriateness of our estimated sample size based on conceptually similar past primary studies (Gibek and Sacha, 2019; Moreno *et al.*, 2018; Andrykowski and Brady, 1994; Rosenzweig *et al.*, 2019). Both methods

yielded comparable results, where in the latter case, our estimated sample size was higher than the analyzed studies.

Ethical consideration

The study protocol and the consent form were approved by the ethical committee of the Mazandaran University of Medical Sciences (IR.MAZUMS..REC.1398.1634). Eligible participants were provided informed consent. An overview of the objectives of the study was provided to the participants, and they were assured that all questionnaires returned were anonymous, and participation in the study was voluntary.

Instruments

Financial burden. This study measured perceived financial burden using comprehensive score for financial toxicity (COST) developed by De Souza *et al.* (2014). The instrument consists of 11 items including one financial item, two resources items and eight affect items. Each item was measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha of the scale was 0.887.

Quality of life. QoL was measured using functional assessment of cancer therapy – general (FACT-G) (Cella and Tulsky, 1993). This multidimensional construct consists of four subconstructs including physical well-being (seven items), emotional well-being (six items), functional well-being (seven items) and social well-being (seven items). A five-point Likert scale ranging from 0 (not at all) to 4 (very much) was used to measure each item. Cronbach's alpha of physical well-being (0.924), psychological well-being (0.854), functional well-being (0.922) and social well-being (0.930) dimensions and also QoL construct as a whole (0.715) showed good internal consistency among the items.

Satisfaction with health insurance. A single-item question was used to measure consumers' overall satisfaction with their health insurance (Zheng *et al.*, 2002). Many studies have measured consumers' satisfaction using a single-item measure in different contexts, and past studies have supported the validity of such measurements (Joo and Grable, 2004; Wanous *et al.*, 1997; Andrews and Withey, 1976).

External locus of control. External LoC was measured using two subdimensions of the nine-item LoC scale, which is the short form of the Levenson (1974) scale, validated by Sapp and Harrod (1993). The two subdimensions include chance and powerful others. Each of the subdimensions were measured using three questions on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha of the scale was 0.752.

Data analysis

Partial least squares structural equation modeling (PLS-SEM) and SmartPLS, version 2.0, were used to assess the measurement and structural model. PLS-SEM is a distribution-free variance-based approach that maximizes the explained variance by the developed model (Pahlevan Sharif and Sharif Nia, 2018). PLS-SEM allows us to assess complex conditional effects models consisting of both observed and latent constructs. This study used a two-step approach to test the model (Becker *et al.*, 2012) due to the presence of both lower-order (i.e. COST) and higher-order constructs (i.e. external LoC and QoL) in the model. To assess the internal consistency among the items and construct validity in terms of construct reliability, convergent validity and discriminant validity, Cronbach's alpha, composite reliability and average variance extracted of each construct as well as average shared variance and maximum shared variance of each construct with others were computed (Fornell and Larcker, 1981; Pahlevan Sharif and Mahdavian, 2015). Cronbach's alpha and composite reliability greater than 0.7 show good internal consistency and construct reliability,

respectively. Average variance extracted greater than 0.5 fulfills the requirement of convergent validity. To establish discriminant validity, average variance extracted of each construct should be greater than its maximum shared variance (Fornell and Larcker, 1981). Subsequently, the structural model was tested. Path coefficients were computed using PLS algorithm and their standard error and p-value were estimated using bootstrapping approach with 2,000 replications. To test the moderating hypothesis, the relationship between the interaction of the standardized values of external LoC and COST with QoL was examined. The mediating hypothesis was tested using a bootstrapping approach (Pahlevan Sharif and Sharif Nia, 2018). Blindfolding procedure was utilized to evaluate predictive accuracy of the model. Missing cases were replaced with the mean. All tests were two-tailed and a p-value of less than 0.05 indicated statistically significant.

Results

The mean age of the participants was 50.02 (SD = 13.57) years. The sample was comprised of mostly married participants (74.9%). The education level of 34.1% of the participants was below secondary school, 26.9% had a diploma and 21.8% reported to have a degree certificate. The mean of the time since diagnosed with cancer was 3.85 years (SD = 3.94). Table 1 reports the results of the measurement model assessment. Cronbach's alpha (ranged from 0.715 to 0.930) and composite reliability (ranged from 0.810 to 0.945) of all constructs were greater than 0.7, indicating good internal consistency among all items and good construct reliability, respectively. Average variance extracted of the constructs (ranged from 0.533 to 0.801) was greater than 0.5 that fulfilled the requirements of convergent validity. The discriminant validity of the constructs was established as average variance extracted of each construct was greater than its respective maximum shared variance with other constructs (ranged from 0.036 to 0.210). All factor loadings were significant at 0.001 and ranged from 0.541 to 0.934 for the lower-order constructs and from 0.428 to 0.918 for the higher-order constructs.

Descriptive statistics of the constructs and the results of conducting the Pearson correlation analysis on the constructs used in the model are reported in Table 2. Table 3 reports the results of the structural model assessment after controlling for the effects of gender, age and cancer stage. The results of testing the total effect model showed a significant positive relationship between health insurance satisfaction and QoL ($\beta = 0.129$, $p < 0.05$), providing support for H1. The total effects model explained 12.8% of the variance of QoL. This allowed us to test the moderated mediation model (Figure 1). The relationship between health insurance satisfaction and COST ($\beta = -0.186$, $p < 0.001$), between COST and QoL ($\beta = -0.387$, $p < 0.001$) and also between external LoC and QoL ($\beta = -0.363$, $p < 0.001$) was negative and statistically significant that supported H2, H3 and H5, respectively. Moreover, the indirect relationship between health insurance satisfaction and QoL through COST was positive and significant ($\beta = 0.072$, $p < 0.001$) that supported H4. The nonsignificant link between health insurance satisfaction and QoL in the conditional effect model indicates that COST is fully mediating this relationship. The results also supported H6 on the moderating role of external LoC on the relationship between COST and QoL ($\beta = 0.145$, $p < 0.01$). In other words, external LoC significantly weakened the negative relationship between COST and QoL (Figure 2). The model explained 6.5% of the variance of COST and 35.5% of the variance of QoL. Also, the model showed good predictive accuracy of COST ($Q^2 = 6.6\%$) and QoL ($Q^2 = 18.4\%$).

Discussion

This study examines the relationship between consumers' satisfaction with their health insurance and QoL, the mediating role of perceived financial burden in this relationship, as

Construct/item	Factor loading	Cronbach's alpha	Communality	Composite reliability	Average variance extracted	Average shared variance	Maximum shared variance
COST		0.887	0.585	0.906	0.585	0.065	0.210
COST 1	0.844***						
COST 3	0.702***						
COST 4	0.846***						
COST 5	0.843***						
COST 9	0.837***						
COST 10	0.642***						
COST 11	0.589***						
QoL (higher-order construct)		0.715	0.533	0.810	0.533	0.057	0.174
QoL functional	0.627***						
QoL physical	0.845***						
QoL psychological	0.918***						
QoL social	0.428***						
QoL (lower-order construct)							
QoL functional		0.922	0.678	0.936	0.678	0.030	0.038
QoL functional 1	0.805***						
QoL functional 2	0.861***						
QoL functional 3	0.857***						
QoL functional 4	0.789***						
QoL functional 5	0.774***						
QoL functional 6	0.799***						
QoL functional 7	0.874***						
QoL physical		0.924	0.688	0.939	0.688	0.139	0.210
QoL physical 1^R	0.814***						
QoL physical 2^R	0.716***						
QoL physical 3^R	0.840***						
QoL physical 4^R	0.870***						
QoL physical 5^R	0.874***						
QoL physical 6^R	0.880***						
QoL physical 7^R	0.802***						
QoL psychological		0.854	0.585	0.893	0.585	0.133	0.139
QoL psychological 1^R	0.836***						
QoL psychological 2	0.541***						
QoL psychological 3^R	0.782***						
QoL psychological 4^R	0.844***						
QoL psychological 5^R	0.789***						
QoL psychological 6^R	0.756***						
QoL social		0.930	0.742	0.945	0.742	0.015	0.036
QoL social 1	0.788***						
QoL social 2	0.934***						
QoL social 3	0.854***						
QoL social 4	0.911***						
QoL social 5	0.868***						
QoL social 6	0.804***						

Table 1.
The measurement model assessment

(*continued*)

Construct/item	Factor loading	Cronbach's alpha	Communality	Composite reliability	Average variance extracted	Average shared variance	Maximum shared variance
External locus of control (higher-order construct)		0.752	0.801	0.890	0.801	0.031	0.164
Chance	0.900***						
Powerful others	0.891***						
External locus of control (lower-order construct)							
Chance		0.732	0.634	0.835	0.634	0.060	0.132
Chance 1	0.896***						
Chance 2	0.844***						
Chance 3	0.621***						
Powerful others		0.790	0.706	0.877	0.706	0.056	0.139
Powerful others 1	0.768***						
Powerful others 2	0.896***						
Powerful others 3	0.851***						

Note(s): [R]Indicates reversed items
*** $p < 0.001$

Table 1.

well as the moderating effect of external LoC on the relationship between perceived financial burden and QoL among consumers diagnosed with cancer. The findings showed that consumers' satisfaction with their health insurance is positively related to their QoL measured with a multidimensional construct consisting of functional, physical, psychological and social aspects of QoL. Indeed, when a health insurance is perceived as valuable by a consumer, his/her utility is expected to increase. This is because consumers with a desirable insurance would less likely sacrifice consumption and other financial resources such as children's education fund, retirement savings, properties or even discontinue their treatment.

Moreover, the results revealed that perceived financial burden mediates the positive relationship between perceived health insurance satisfaction and QoL of consumers with cancer. These results improve our understanding of the relationship between health insurance and QoL. More specifically, consumers who reported to have a more pervasive insurance perceived less financial burden related to their disease and in turn experienced a higher QoL. The results highlight the importance of perceived financial burden in cancer consumers' QoL. Indeed, consumers with a more beneficial insurance perceived the effect of cancer to be less deleterious on their financial spending and financial resources. They also perceived more financial satisfaction and less financial stress, thus resulting in a higher level of QoL than those who reported to have a lower quality health insurance. Moreover, the full mediation results indicate that the effect of insurance on QoL is fully explained by the perceived direct and indirect effects of health insurance on consumers' consumption and in reducing their financial stress when facing a life-threatening event.

The moderating role of external LoC in this study is twofold. Firstly, the results showed that external LoC has a negative relationship with QoL. The negative relationship between external LoC and QoL is consistent with a large body of research relating external LoC to demotivation, anxiety, depression and negative psychological outcomes which lower QoL (Pahlevan Sharif, 2017; Sharif and Khanekharab, 2017; Birmele *et al.*, 2012; Helvik *et al.*, 2016; Brown *et al.*, 2015; Panagiotou *et al.*, 2014). Research has shown that consumers with high

Table 2.
The correlation between the constructs

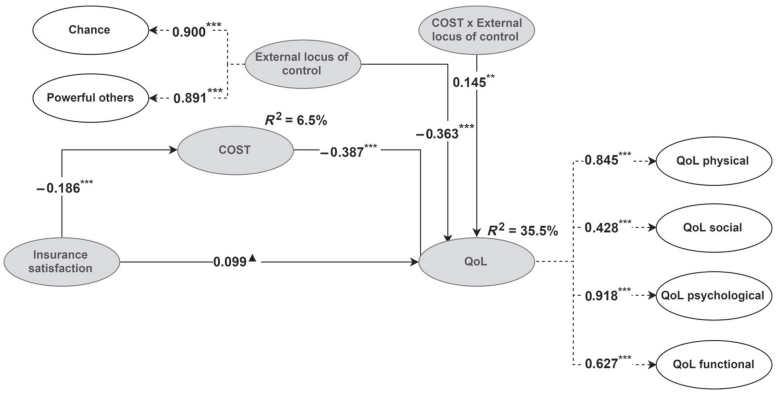
	The mean of the items		Using the latent variable score of the PLS-SEM model								
	Mean	SD	[1]	[2]	[3]	[3.1]	[3.2]	[4]	[4.1]	[4.2]	[4.3]
[1] Insurance satisfaction	3.767	1.141									
[2] COST	3.397	0.897	−0.192***								
[3] External locus of control	3.109	0.875	0.049	0.078							
[3.1] Chance	3.152	0.906	0.078	0.089	0.896***						
[3.2] Powerful others	3.065	1.051	0.010	0.051	0.894***	0.603***					
[4] QoL	1.971	0.738	0.141**	−0.402***	−0.397***	−0.359***	−0.352***				
[4.1] QoL physical	1.755	1.018	0.102*	−0.459***	−0.356***	−0.363***	−0.274***	0.799***			
[4.2] QoL social	2.307	1.079	0.146**	−0.039	−0.149**	−0.076	−0.191***	0.499***	−0.008		
[4.3] QoL psychological	2.030	0.948	0.109*	−0.363***	−0.408***	−0.357***	−0.372***	0.896***	0.772***	0.257***	
[4.4] QoL functional	1.854	0.947	0.084	−0.196***	−0.178***	−0.161**	−0.157**	0.689***	0.257***	0.656***	0.382***

Note(s): Two-tailed test
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Paths	Standardized path coefficient	95% confidence intervals Lower bound	Upper bound	Hypothesis
Total effects model				
Insurance satisfaction → QoL	0.129*	0.001	0.257	H1
Moderated mediation model				
Insurance satisfaction → COST	−0.186***	−0.278	−0.095	H2
COST → QoL	−0.387***	−0.472	−0.302	H3
External LoC → QoL	−0.363***	−0.436	−0.289	H4
Insurance satisfaction → QoL	0.099▲	−0.003	0.201	
Insurance satisfaction → COST → QoL	0.072***	0.032	0.112	H5
COST × external LoC → QoL	0.145**	0.054	0.237	H6

Note(s): Controlled for the effects of gender, age and cancer stage; two-tailed test
▲$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 3.
The results of the structural model assessment



Note(s): Controlled for the effects of gender, age, and cancer stage; two-tailed test. The dashed lines indicate relationships between a higher order construct with its lower order constructs. ▲$p < 0.1$, **$p < 0.01$, ***$p < 0.001$

Figure 1.
The conditional effect model with the results

level of external LoC tend to have less effective coping strategies to cope with problems and stresses in the time of crisis than more internal-oriented ones (Pahlevan Sharif, 2017; Sharif and Khanekharab, 2017; Lin and Tsay, 2005; Shaha *et al.*, 2008). They tend to put less effort into solving the problems brought about by the disease and its related financial burden compared to those who believe in their own efforts in resolving problems.

Secondly, surprisingly, the results revealed that external LoC weakens the negative relationship between financial burden and QoL among consumers suffering from cancer. Past studies show that there are studies suggesting that believe in having control might be stressful and such believe can contribute to anxiety and stress, which in turn would have a negative impact on consumers' QoL (Aarts *et al.*, 2015; Averill, 1973; Thompson, 1981). In other words, perceiving that much of what happens in life (e.g. health and financial difficulties) is controlled by external factors including powerful others, fate or coincidence would shift the responsibility away from consumers. As a result, these consumers may blame the health-care system, their health insurance, their medical team, the government or their

fate for their financial burden caused by cancer, rather than considering a role for themselves. They feel less responsible for the problems associated with their cancer and are less pressured to find a solution, thus weakening the negative impact of their perceived financial burden on their QoL.

The results show the role that consumers' satisfaction about health insurance can play in explaining financial burden and perceived QoL of consumers such that QoL of consumers with cancer is partly dependent on their satisfaction with their health insurance. Satisfaction is the consumers' cognitive response relating to their expectations and perceptions of the product or service (Parasuraman *et al.*, 1985; Zeithaml *et al.*, 2010). From the expectancy disconfirmation model, any disparity between consumers' expectations and reality would affect consumers' satisfaction/dissatisfaction (Zeithaml *et al.*, 2010; Oliver, 2014; Grimmelikhuijsen and Porumbescu, 2017). This highlights the importance of consumers' awareness of the benefits and limitations of health insurance policies to reduce the gap between expectation and perception as consumers would assess how well the insurance service live up to their expectation. Indeed, as the current study used consumers' satisfaction with their health insurance rather than measuring actual monetary benefits of the insurance policy, it is suggested that insurance companies support and provide services to improve consumers' satisfaction and their QoL. Therefore, insurance providers cannot enhance patients' satisfaction by focusing only on improving the quality of insurance plans and eliminating the gap between consumers' expectations and perception should be taken into account too.

Patients' satisfaction is not solely associated with the quality of the offered services (supply side) but also the fulfillment of patients' expectations (demand side) plays a significant role. Indeed, the key point which mainly health insurance policymakers fail to notice in their action plans is to reduce the gap between consumers' expectations and perception. In other words, to improve patients' satisfaction, both supply-side interventions and demand-side expectations should be molded. While the supply-side interventions (e.g. upgrade of a particular service offered by any health insurance package) require additional resources and lengthy administrative procedures, improvement of the demand-side factors could be a more feasible option. This is more relevant in the context of a government-dominant system such as Iran pressurized by international sanctions.

There is a large body of research on improving customer satisfaction through managing customers' expectations and reducing the customers' expectation–perception gap. In this vein, while insurance providers should fulfill their promises (Yi and La, 2003), they are recommended to manage customers' expectations through different mechanisms (Van ryzin,

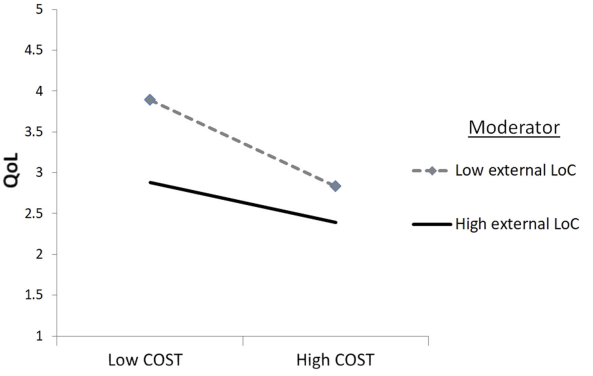


Figure 2.
The relationship between COST and QoL for different levels of external locus of control

2004). First, insurance organizations need to define the baseline expectations which are mostly set by laws, regulations, and industry standards. For example, the "gray areas" of payments in the health system in Iran should be addressed (Marnani *et al.*, 2012) as many services are not clearly inscribed if they are under the insurance coverage. Second, using proper communication strategies, the straightforward message should be conveyed to their customers. Having a realistic understanding of the available services, insurance coverage and procedures would align customers' expectations with reality. To do so, organizations should present accurate, consistent and up-to-date information, in a nontechnical language that is understandable by consumers, in marketing campaigns, public statements, brochures, social marketing initiatives and on their websites. Also, all agents and staff involved in direct communications with customers need to be appropriately trained. Finally, organizations are recommended to revise their strategies, communications, staff training programs through customers and health-care providers' feedback to reduce inconsistency between customers' expectations and offered services.

The results of past studies show that service providers tend to heighten rather than lower expectations, which would result in more negative disconfirmation and lower customer satisfaction (Van ryzin, 2004). In the context of this study, as many patients look up to and rely upon their health insurance for their survival, the health insurance providers should feel the moral obligation not to heighten the expectation. Eluding equivocal marketing strategies which leads to more transparency would reduce the need for future readjustment of the expectations. In healthcare, when patients' expectations are met, they would evaluate the insurance system positively which emerges as a valuable marketing tool for the health insurance providers. That justifies that notion that marketing in the health-care insurance system is through the nature of demand (Purcarea, 2019).

Limitations

The cross-sectional design of this study does not allow for confident causal conclusions. Future longitudinal research is recommended. Moreover, collecting data from urban areas using a convenience sampling technique limits the generalizability of the findings. Future studies should include samples from rural areas and other states as geographic location may influence consumers' perceived financial burden. Furthermore, this study measured consumers' satisfaction with health insurance using a single-item measurement. Although past studies have shown a single-item measurement of satisfaction has acceptable validity, using a multidimensional measurement would give us more in-depth information about the role of consumers' satisfaction.

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