Financial literacy and quality of life of consumers faced with cancer: a moderated mediation approach

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Abstract

Purpose – The purpose of this paper is to investigate whether financial distress explains the relationship between financial literacy and quality of life (QoL) among consumers who have faced life-threatening cancer. To extend this line of research, the moderating role of social supports in the relationship between financial distress and QoL is examined.

Design/methodology/approach – A cross-sectional survey was utilized to collect quantitative data through a self-administered questionnaire. A total of 223 consumers diagnosed with cancer in Iran participated in the study by means of a convenience sampling technique. Using a forward–backward method the questionnaire was translated from English into Persian.

Findings – The findings highlight the importance of financial literacy in managing direct and indirect costs of chronic diseases that in turn can improve consumers' QoL. Moreover, while perceived social support improves QoL of consumers diagnosed with cancer, it strengthens the negative association between financial distress and QoL. Consequently, solely receiving of emotional support from acquaintances with no financial support might be bothersome.

Practical implications – The findings highlight the need for interventions that target financial literacy and perceived financial distress for consumers with chronic diseases. These consumers can benefit from interventions that offer support based on accurate assessments of their needs and priorities.

Originality/value – The present study is the first of its kind to highlight the importance of financial literacy in improving the QoL of consumers with chronic diseases.

Keywords Consumer behavior, Financial literacy, Financial distress, Quality of life, Social support, Cancer

Paper type Research paper

Introduction

In today's world, financial literacy is considered a critical life skill for consumers (Lusardi, 2012; Lusardi and Mitchell, 2014). However, many consumers around the world lack opportunities for acquiring this essential knowledge (Estelami, 2016), which ultimately limits their personal financial behavior (Huhmann, 2017). This study refers to financial literacy as the knowledge of basic economic and financial concepts which are necessitated for the effective management of financial resources in order to achieve financial well-being (Hung *et al.*, 2009). The knowledge of these concepts has been linked to better retirement planning (Lusardi and Mitchelli, 2007; Lusardi and Mitchell, 2011; Van Rooij *et al.*, 2012), limited indebtedness (Lusardi and Tufano, 2015), greater

investment intention (Sivaramakrishnan *et al.*, 2017), active participation in financial markets (Van Rooij *et al.*, 2011) and greater household wealth accumulation (Van Rooij *et al.*, 2012).

Additionally, a growing body of research has demonstrated that consumers' financial literacy is linked to life satisfaction, physical and psychological well-being and more broadly to quality of life (QoL) (Xiao *et al.*, 2009; Shim *et al.*, 2010a; Garman *et al.*, 1996; Volpe *et al.*, 2006; Xiao and Porto, 2017; Nejad and Javid, 2018). The impact of financial literacy on QoL appears more critical in predicament periods in consumers' life, when opportunities to make money are limited. For example, an individual who might live with a chronic disease, such as cancer for a long period of time, requires financial literacy to utilize resources and become more confident about the future and experience better QoL.

In reality, cancer as the most fatal chronic disease incurs significant direct (i.e. medical) and indirect (i.e. nonmedical) expenses for consumers (Sherman *et al.*, 2001), both of which are types of financial burden for the consumers and their families. Specific cancer treatments often exceed household income levels (Nilssen *et al.*, 2016; Paul *et al.*, 2016), which in turn impose unanticipated financial burden (i.e. out-of-pocket costs that are not covered by health insurance) on them (Sherman *et al.*, 2001; Svynarenko *et al.*, 2019; Carrera *et al.*, 2018). Moreover, following the diagnosis and treatment, many patients are forced to apply for unpaid leave or they might lose their job, which will intensify their vulnerable economic situation (Shankaran *et al.*, 2012). Upon completion of treatment, cancer survivors may rejoin the workforce though after long searches for jobs. However, many of them reported struggles with their disabilities which would impact their employment (Callahan and Brintzenhofeszoc, 2015). Empirical evidence indicates that 70% of consumers diagnosed with cancer reduce their leisure activities, 48% withdraw savings and 18% sell their possessions (De Souza *et al.*, 2014). Therefore, it is envisaged that being financially literate would prepare consumers with chronic disease for unexpected expenses and improve their QoL. Hence, considering the extensive financial burden cancer treatment imposes on the affected individual, the aim of the present study is to investigate if financial literacy has any positive impact on QoL of consumers with cancer.

The scope of the present research is limited to consumers who have been diagnosed with cancer in Iran, as the country's economic situation as a whole and health system particularly has markedly deteriorated during the many years of embargos. The US administration's withdrawal from the Iran nuclear deal in May 2018 and the embargo imposed in 2015 have had a profound impact on different sectors of the economy. Decline in oil export, the fall of Iranian rial, inflationary pressures and further slumps in inflow of foreign capital and investments (Khan, 2018) can be considered as adverse economic consequences of the sanctions. Nevertheless, from a medical point of view, sanctions would have detrimental impacts on health of Iranian people, notably consumers suffering from cancer. The fight against malignancy commences with the diagnosis, followed by invasive treatments that require advanced technology and medications, which necessitate access to the global market. However, difficulties in financial transactions and shipping insurance, as well as fear of possible US ban on international medical companies, have restricted the pathway for acquiring drugs and equipment needed by cancer consumers (Pahlevan Sharif *et al.*, 2018). Moreover, sanctions restrict the access of Iranian medical institutions to the leading research centers, which will impede cancer research in the country. In addition, according to Moradi-Lakeh and Vosoogh-Moghaddam (2015), although 95% of Iranians are covered by government insurance, public insurance does not cover the high cost of cancer treatment, thus restricting the access of middle and lower economic layers to these technological advancements needed to diagnose and cure chronic diseases.

In such unstable economic environment compounded with vulnerable healthcare system, financial literacy as the knowledge to process economic information, utilize financial

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products and make appropriate financial decisions become of high importance. Unfortunately, there is no specific program in schooling curriculum to familiarize people from an early age with the concept of financial literacy in Iran (Nejati *et al.*, 2015). Despite its necessity, financial literacy rarely has been investigated in Iran. Some research attempt has been done to measure the level of financial literacy, though among limited groups of consumers such as university professors, students and limited families in Tehran. The reported results show that low level of financial literacy is prevalent among targeted groups of consumers (Addin *et al.*, 2013; Taft *et al.*, 2013).

Although in the contemporary literature, there is a growing focus on the importance of financial literacy, to the best of authors' knowledge, research on the effects of financial literacy on QoL in challenging circumstances, fragile economies and healthcare systems is scarce. Given the increasing global cancer incidence, one of these challenging situations can be interpreted as patients fighting with cancer in a healthcare system severely affected by sanctions. Thus, it seems crucial to identify whether financial literacy could improve the QoL of consumers with cancer through reducing their financial distress. Moreover, to further extend this line of research, the present study investigates whether social supports mitigate the effects of pressure imposed by financial distress on cancer consumers' QoL.

Literature review
Financial literacy and quality of life
There is a robust body of the literature on consumer behavior and utility in the business-oriented literature (Khan *et al.*, 2019; Taufique and Vaithianathan, 2018; Murphy and Dweck, 2016; Mcneil and Arena, 2017; Ismagilova *et al.*, 2019; Ćumurović and Hyll, 2018). The theoretical background applied in such studies has the potential to be applied in the research on financial literacy and its impact on QoL. Consumer behavior and financial literacy consist of processes used to select and utilize the products to satisfy needs. In the context of the present study, the term "consumer behavior" refers to the decisions made by cancer patients aimed at meeting their needs, thus improving their QoL.

The concept of financial literacy is rooted in Milton Friedman's permanent income hypothesis, one of his most important theoretical contributions. Friedman's main argument is that, if someone experiences a temporary decline in income, his/her consumption will not decline by the same amount. Similarly, if a person has an especially good year in terms of earnings, this money is usually not spent at once (Friedman, 1957). Nevertheless, in the lifecycle hypothesis, it is argued that people smooth out fluctuations in income so that they save during periods of unusually high income and dissave during the periods of unusually low income (Ando and Modigliani, 1963). The lifecycle and permanent income hypotheses have greatly improved our understanding of consumption behavior and the individual motives for saving. The above discussion provides the grounds for emergence of financial literacy in the contemporary literature.

To connect this definition from the prior literature with Friedman's hypothesis, financial literacy can be interpreted as one's knowledge to utilize the financial resources acquired in times of high earning in order to smoothen the consumption fluctuations in the periods of life when income is much lower (Jappelli, 2005). In practice, dissaving typically occurs late in life, or in predicament periods, when some of life's most significant and influential decisions should be made. For example, upon retirement, most consumers have lower income and greater medical expenses, which can affect their consumption patterns. Subsequently, policy makers often attempt to boost consumers' financial literacy levels, especially during economic downturn (Lee, 2017). Additionally, dissaving occurs when consumers are diagnosed with chronic diseases (Haider *et al.*, 2000), since consumers might have to live with a chronic disease for a long period of time (Pahlevan Sharif and Ong, 2018) with limited income opportunities. Financial literacy makes such consumers better equipped to cope with

the aforementioned dissaving times by smoothening the fluctuating consumption, allowing them to maintain good QoL. Moreover, as high direct and indirect expenses of cancer treatment impose high financial burden on consumers (Fenn *et al.*, 2014) they should formulate various treatment options to decide which one suits their current vulnerable financial situation the most. In other words, financial literacy can improve consumers' behavior (Shen, 2016; Santini *et al.*, 2019) by serving as a tool to boost the quality of treatment option that is deemed to give the highest value to the consumer with cancer (Xiao *et al.*, 2011). Therefore, this study postulates that:

> *H1.* There is a positive relationship between financial literacy and QoL in consumers diagnosed with cancer.

The mediating role of financial distress

Consumers diagnosed with cancer may go through financial hardship due to increasing cost of healthcare expenditures. In this context, financial distress describes the burden that consumers with cancer face when they incur out-of-pocket expenses for their diagnosis and treatment (Zafar and Abernethy, 2013). In some studies, this concept has been used interchangeably with different terms, such as financial toxicity (Zafar *et al.*, 2013), financial burden (Khera *et al.*, 2014), and out-of-pocket cost (Zafar and Abernethy, 2013). Being in debt as a result of treatment-related expenses, selling stock, or using up savings or retirement funds, as well as income decline due to work disabilities/unemployment/leave-of-absence are some examples that cause financial distress for these consumers (Shankaran *et al.*, 2017). Empirical evidence indicates that 70% of consumers diagnosed with cancer reduce leisure activities, 48% withdraw savings and 18% sell their possessions (De Souza *et al.*, 2014). Moreover, out-of-pocket cost of treatment often forces consumers with chronic disease and low income to reduce expenditure on food and even medication, which exacerbates their health problems (Galbraith *et al.*, 2011; Ubel *et al.*, 2013; Kullgren and Mclaughlin, 2010; Meyer, 2017).

Another consequence of high financial distress might be foregoing the medical care completely or switching from a more effective to a less effective therapy. Similarly, Mcnulty and Khera (2015) concluded that high cost of medical treatment limits the cancer consumers' access to additional care, which can result in treatment non-adherence. This treatment non-adherence or discontinuation will deteriorate QoL and increase morbidity and mortality rates (Shankaran *et al.*, 2012; Khera *et al.*, 2014; Kent *et al.*, 2013). Therefore, financial distress induced by cancer care can significantly affect treatment compliance and QoL of consumers (Zafar *et al.*, 2011, 2013).

According to Pearce *et al.* (2019) financial distress is more than cost of care. It goes beyond merely direct and indirect costs of treatment to causing distress, anxiety and depression (Kale and Carroll, 2016; Fenn *et al.*, 2014). In such a scenario, financial literacy as a lifelong learning experience empowers consumers to understand financial concepts and apply them in everyday life (Pllock, 2014). Since it is associated with vigilant attitudes toward money and saving, we expect that cancer consumers with a higher level of financial literacy experience less financial hardship. This is because financial literacy enables consumers to balance between frail sources of income and diverse expenses ranging from daily chores to imposed costs of medical treatment. Thus, it is expected that financial distress would be less severe in cancer consumers with a higher degree of financial literacy. This in turn would improve their QoL.

Above explanation can be translated as the mediating role of financial distress on the impact of financial literacy on QoL. While the concepts of financial distress and its impacts on QoL of consumers with cancer have been investigated in the extant literature (Fenn *et al.*, 2014; Kale and Carroll, 2016), research on the relationships between financial literacy with financial distress and QoL is limited. This study contributes to this body of knowledge by

investigating not only the direct relationship between financial literacy and QoL but also its indirect association through financial distress among consumers diagnosed with cancer. Therefore, the following hypotheses are developed.

H2. There is a negative relationship between financial literacy and financial distress in consumers diagnosed with cancer.

H3. There is a negative relationship between financial distress and QoL in consumers diagnosed with cancer.

H4. Financial distress mediates the relationship between financial literacy and QoL in consumers diagnosed with cancer.

Social support and quality of life
It is not uncommon for consumers who have faced the life-threatening event of cancer to go through spiritual hardships as they face despair and discouragement due to invasive treatment and fear of death (Pahlevan Sharif and Ong, 2018). Furthermore, cognitive impairments, inability to make plans, changes in sexual function and reproductive abilities, fear of future and concern about body image (Medicine and Council, 2006), when combined with financial burden, induce a sense of heightened vulnerability. While deficit-oriented research focuses on the negative psychological impact of chronic diseases on consumers, such as depression, anxiety and loss of functioning, the resource-oriented approach aims to explain how some positive psychological factors can mitigate the negative consequences of the disease and improve consumers' QoL. Factors such as habitual optimism (Saboonchi *et al.*, 2016; Ha and Cho, 2014), self-efficacy (Shelby *et al.*, 2014) and social support (Spatuzzi *et al.*, 2016) play the role of buffers to provide psychological motivation for the consumers with cancer.

Social support is defined as emotional and instrumental support (Finck *et al.*, 2018) and has recently received considerable attention. Social support would reduce anxiety and spread optimist feelings toward future. Consumers who are happy with social support experience higher life expectancy, better coping ability, and, in turn, perceive their health more positively (Dakof and Taylor, 1990; Koopman *et al.*, 1998). The research has shown that social support groups not only provide psychological but also in some cases financial support. For example, these groups contribute in childcare or transportation expenses (Gustafson *et al.*, 2005).It is discussed in the pertinent literature that social support leaves both positive and negative impact on QoL. However, mostly research focuses on its positive aspect, which obscures the negative side of social relations (Lincoln, 2000). Some research has reported that the intensity of negative interactions on QoL is stronger than positive interactions (Davis and Rhodes, 1994). It is argued that though the negative interaction happens less frequently, it plays a more important role in one's QoL (Schuster *et al.*, 1990). Conversely, Okun and Keith (1998) and Ingersoll-Dayton *et al.* (1997) showed an equal or more potent effect from positive social interactions than from negative ones.

The conflicting results furthermore have been interpreted through two distinct approaches named as source-specific approach and global-specific approach (Lincoln, 2000). The former is the approach in which different people at varying degree of closeness in an individual's network (e.g. spouse, family, friends, colleagues and roommates) can be sources of support for the consumers with cancer. In the global approach, irrespective of sources of support, the focus is on various dimensions of support (Finch *et al.*, 1989). Therefore, it is reasonable to expect that different sources of support and different dimensions of support produce conflicting impacts on consumers' QoL (Lincoln, 2000). While the source-specific approach includes varied people, sometimes they fail to behave in a helpful optimistic manner (Dunkel-Schetter, 1984). Other scenario is the situation that correct social support is offered by the person the patient does not feel convenient to receive the support from.

For consumers with a chronic disease like cancer, it is of high importance to receive social support from those they wish, as they sometimes receive support from those they do not want in their lives. A German study has shown that patients value the social support offered by family, friends and physicians, rather than religious gurus and social workers. Therefore, it is claimed that psychological and social support should be an integral part of quality cancer care (Adler and Page, 2008).

Applying both approaches, the current study aims to investigate if social support can mitigate the pain of financial burden. To the best of the authors' knowledge, there is no empirical evidence in the literature on whether receiving social supports can alleviate the negative impact of financial burden on QoL. Hence, to fill the gap in our knowledge, based on the literature reviewed above and for the purpose of this study, the following hypotheses are developed.

H5. There is a positive relationship between social support and QoL in consumers diagnosed with cancer.

H6. Social support moderates the relationship between financial distress and QoL in consumers diagnosed with cancer.

Figure 1 shows the developed research model and proposed hypotheses.

Methodology
This study adopted a cross-sectional, questionnaire-based survey. The eligibility criteria to include samples in the study were being diagnosed with cancer and being at least 18 years
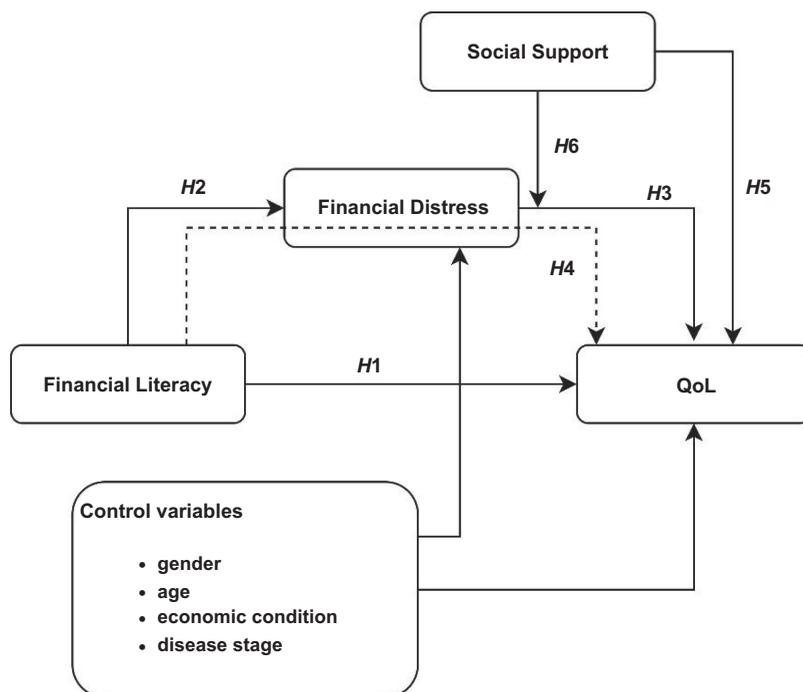

Figure 1.
The research model
and proposed
hypotheses

Note(s): The dash-dotted line represents the mediation link

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old. The sample consisted of 223 consumers diagnosed with cancer who visited the Gastrointestinal Cancer Research Center in Iran for their treatment. Data were collected using a convenience sampling technique from August 2018 to January 2019. During the data collection period, a trained research assistant approached the patients while they were waiting for their appointment in the center to explain the purpose, procedure and time required to participate in the study. Assessments were conducted in a quiet corner in the waiting room of the center. No incentive was offered to the participants and they were assured that their participation in the study is voluntary and all questionnaires are anonymous. The self-administered questionnaire consisted of two sections including participants' socio-demographic characteristics such as gender, age and ethnicity, and items to measure the variables in the research model.

Participants
Demographic and clinical characteristics of the participants are reported in Table 1. Participants' age ranged from 18 to 86 years old ($M = 50.12$, SD $= 14.19$). Among them, 113 were male (50.67%). They were mainly married ($n = 163$, 73.09%) and from urban areas

Characteristic	N	%	Characteristic	N	%
Gender			Disease impact on job		
Male	113	50.67	No effect	54	24.22
Female	110	49.33	Reducing work	65	29.15
Marital status			Transition to part time	21	9.42
Single	33	14.80	Changing the job	5	2.24
Married	163	73.09	Losing job	63	28.25
Divorced	16	7.17	Missing	15	6.73
Widowed	10	4.48	Insurance coverage		
Missing	1	0.45	Yes	203	91.03
Education level			No	20	8.97
Illiterate	20	8.97	Cancer type		
Primary school	24	10.76	Breast	45	20.18
Guidance school	35	15.70	Gastrointestinal	45	20.18
Secondary school	59	26.46	Hematologic	44	19.73
College	28	12.56	Head and neck	24	10.76
Degree	45	20.18	Renal system	19	8.52
Master and PhD	12	5.38	Liver	14	6.28
Living area			Lung	14	6.28
Urban areas	161	72.2	Ovary	6	2.69
Rural areas	58	26.01	Uterus	5	2.24
Missing	4	1.79	Missing	7	3.14
Employment			Disease stage		
Full time	79	35.43	Stage 0	3	1.35
Part time	22	9.87	Stage 1	47	21.08
Unemployed	80	35.87	Stage 2	42	18.83
Retired	29	13.00	Stage 3	32	14.35
Missing	13	5.83	Stage 4	13	5.83
Economic condition			I do not know	85	38.12
Very weak	9	4.04	Missing	1	0.45
Weak	29	13.00	Disease status		
Average	141	63.23	Recently diagnosed	22	9.87
Good	38	17.04	Under treatment	171	76.68
Excellent	6	2.69	Completed treatment	25	11.21
	Mean	SD	Missing	5	2.24
Age	50.12	14.19			

Table 1.
Socio-demographic
and clinical profile of
the respondents

($n = 161$, 72.20%). While 20 participants were illiterate (8.97%), the education level of 118 (52.92%) of them ranged from primary to secondary school, 45 of them (20.18%) had a degree certificate, 28 (12.56%) completed college and 12 of them had postgraduate certificate (5.38%). In terms of employment, 80 (35.87%) participants were unemployed, 79 (35.43%) of them had a full-time job, 29 (13.00%) of them were retired and 22 (9.87%) of them had a part time job. A higher percentage of participants were covered by government medical insurance (81.17%) than by private medical insurance (9.87%). The majority ($n = 154$, 69.06%) reported that cancer had an impact on their job. More specifically, 65 respondents (29.15%) reduced their work, 63 of them (28.25%) lost their jobs and 21 participants (9.42%) were transitioned to part time. Additionally, 171 respondents (76.68%) indicated that they were under treatment, 25 of them (11.21%) had completed their treatment, and 22 (9.87%) of them were recently diagnosed with cancer.

Measures

Financial literacy. Financial literacy of the participants was assessed using five questions evaluating participants' basic financial knowledge about interest rates, time value of money, discounting and compounding, the effect of inflation and nominal versus real values (Van Rooij *et al.*, 2011). The total number of correct answers to the questions ranged from zero (no correct answer) to five (correct answer to all questions) led to the financial literacy score. Cronbach's alpha of financial literacy in this study was 0.810.

Financial distress. To measure perceived financial distress, the comprehensive score for financial toxicity (COST) measure developed by De Souza *et al.* (2014) was used. The 11-item scale consisted of one financial item (e.g. "my out-of-pocket medical expenses are more than I thought they would be"), two resources items (e.g. "I am able to meet my monthly expenses") and eight affect items (e.g. "feel financially stressed"). Each item was measured on a five-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha of the scale in this study was 0.816.

Social support. Social support was measured using a 12-item multidimensional scale of perceived social support that addressed perceived support from family (e.g. "I get the emotional help and support I need from my family"), friends (e.g. "my friends really try to help me") and significant other (e.g. "there is a special person in my life who cares about my feelings") (Zimet *et al.*, 1988). Each item of the scale was measured on a seven-point Likert scale that ranged from 1 (strongly disagree) to 7 (strongly agree). Cronbach's alpha of the scale in the current study was 0.945.

Quality of life. This study measured QoL using functional assessment of cancer therapy—general (FACT-G) (Cella *et al.*, 1993). The scale consists of four subscales including physical well-being (seven items), emotional well-being (six items), functional well-being (seven items) and social well-being (seven items). Each item was measured on a five-point Likert scale that ranged from zero (not at all) to four (very much). Cronbach's alpha of physical well-being (0.894), emotional well-being (0.843), functional well-being (0.900) and social well-being (0.897) dimensions and also QoL construct as a whole (0.943) was greater than 0.7, indicating good reliability.

All items of the measurements are reported in Appendix. We used the Persian translation of the FACT-G questionnaire without any changes to the wording or phrasing of the translated instrument. Other measures were translated from English into Persian using a forward–backward method.

Data analysis

Socio-demographic characteristics of the participants and their clinical profile were summarized using frequencies and percentages for categorical variables as well as mean

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and standard deviation for continuous variables. The arithmetic mean of financial literacy, financial distress and social support items, as well as the total score of the QoL items, were computed to be used in the data analysis. The relationship between the variables was evaluated using Pearson correlation analysis. The total effect of financial literacy on QoL was tested using regression analysis and SPSS software version 20. In order to assess the moderated mediating effects and test the research hypotheses, this study used model 14 of PROCESS macro specifying financial literacy as the independent variable, QoL as the dependent variable, financial distress as the mediator, social support as the moderator and gender, age, economic situation and disease stage as the control variables in the model (Hayes, 2017). A nonparametric distribution free bootstrapping technique with 1,000 replications was performed. All tests were two-tailed and a p-value of less than 0.05 was considered to be statistically significant.

Results

Table 2 shows the results of the Pearson correlation analysis of the relationships among the variables financial literacy, financial distress, social support and QoL (FACT-G and its subscales). As shown in the table, while financial literacy had a significant negative relationship with financial distress ($r = -0.144$, $p < 0.05$), its relationship with QoL ($r = 0.130$, $p = 0.052$) and functional dimension of QoL ($r = 0.177$, $p < 0.01$) was positive. Financial distress was negatively related with social support ($r = -0.149$, $p < 0.05$), QoL ($r = -0.330$, $p < 0.001$) and its subscales including physical ($r = -0.387$, $p < 0.001$), social ($r = -0.134$, $p < 0.05$), psychological ($r = -0.226$, $p < 0.01$) and functional well-being ($r = -0.314$, $p < 0.001$). Moreover, social support had a significant positive relationship with QoL ($r = 0.682$, $p < 0.001$) and its subscales including physical ($r = 0.411$, $p < 0.001$), social ($r = 0.772$, $p < 0.001$), psychological ($r = 0.516$, $p < 0.001$) and functional well-being ($r = 0.570$, $p < 0.001$).

Next, to test the research hypotheses, this study developed two models: (1) the total effect model representing the effect of financial literacy on QoL and (2) the moderated mediation effect model representing the mediating effect of financial distress in the relationship between financial literacy and QoL while social support moderated the financial distress-QoL link. The results of testing the models after controlling for the effects of gender, age, economic situation and disease stage are reported in Table 3. The results of assessing the total effect model showed that financial literacy was positively related to QoL ($\beta = 0.137$, $p < 0.05$), providing support for H1. In the moderated mediation model, there was a significant negative relationship between financial literacy and financial distress ($\beta = -0.122$, $p < 0.05$) and between financial distress and QoL ($\beta = -0.219$, $p < 0.001$), supporting H2 and H3, respectively. Moreover, the results supported H4 on the mediating role of financial distress in the relationship between financial literacy and QoL ($\beta = 0.027$, $p < 0.05$). The non-significant financial literacy-QoL link in the conditional effect model ($\beta = 0.065$, $p = 0.165$) indicated that financial distress fully mediated this relationship. Social support was associated with QoL ($\beta = 0.650$, $p < 0.001$) that supported H5. Finally, the relationship between the interaction of financial distress and social support with QoL was significant ($\beta = -0.115$, $p < 0.05$), which supported H6 on the moderating effect of social support on the association between financial distress and QoL. The results of testing the control variables in the model showed that economic condition had a significant negative effect ($\beta = -0.313$, $p < 0.001$) and disease stage had a significant positive effect ($\beta = 0.186$, $p < 0.01$) on financial distress.

Figure 2 shows the mediating relationship between financial literacy and QoL through financial distress for different levels of social support. Also, this study used the Johnson-Neyman technique to identify that the range of social support of which the effect of financial distress on QoL was significant was between 0.05 and 0.1 (Hayes, 2017). For a social support

Table 2.
The results of Pearson correlation analysis

	Mean	SD	Financial distress	Social support	Total	Physical	QoL Social	Psychological	Functional
Financial literacy	2.094	1.705	−0.144*	0.073	0.130***◆	0.108	0.067	0.070	0.177**
Financial distress	3.383	0.748		−0.149*	−0.330***	−0.387***	−0.134*	−0.226**	−0.314***
Social support	4.896	1.399			0.682	0.411***	0.772***	0.516***	0.570***
QoL	50.309	20.571				0.859***	0.765***	0.856***	0.803***
QoL Physical	10.036	6.801					0.458***	0.782***	0.548***
QoL Social	15.121	5.787						0.525***	0.573***
QoL Psychological	10.776	5.997							0.505***
QoL Functional	14.377	6.439							

Note(s): *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

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Paths	Standardized coefficient	95% confidence interval Lower bound	Upper bound
Total effect model			
Financial literacy → QoL	0.137*	0.008	0.266
Gender → QoL	0.082	−0.050	0.213
Age → QoL	0.102	−0.027	0.231
Economic situation → QoL	0.202**	0.072	0.331
Disease stage → QoL	0.092	−0.038	0.223
Moderated mediation model			
Financial literacy → Financial distress	−0.122◆	−0.245	0.002
Financial distress → QoL	−0.219***	−0.318	−0.119
Social support → QoL	0.650***	0.556	0.744
Financial distress × Social support → QoL	−0.115*	−0.203	−0.027
Financial literacy → QoL	0.065	−0.027	0.156
Financial literacy → Financial distress → QoL	0.027*	0.001	0.061
Financial literacy → Financial distress → QoL | Social support = −1 SD	0.013	−0.001	0.038
Financial literacy → Financial distress → QoL | Social support = +1 SD	0.041*	0.001	0.093
Control variables			
Gender → Financial distress	−0.069	−0.194	0.057
Gender → QoL	0.071	−0.021	0.164
Age → Financial distress	−0.012	−0.135	0.111
Age → QoL	0.109*	0.018	0.200
Economic situation → Financial distress	−0.313***	−0.437	−0.190
Economic situation → QoL	0.015	−0.083	0.112
Disease stage → Financial distress	0.186**	0.061	0.310
Disease stage → QoL	0.064	−0.031	0.158

Note(s): ◆$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

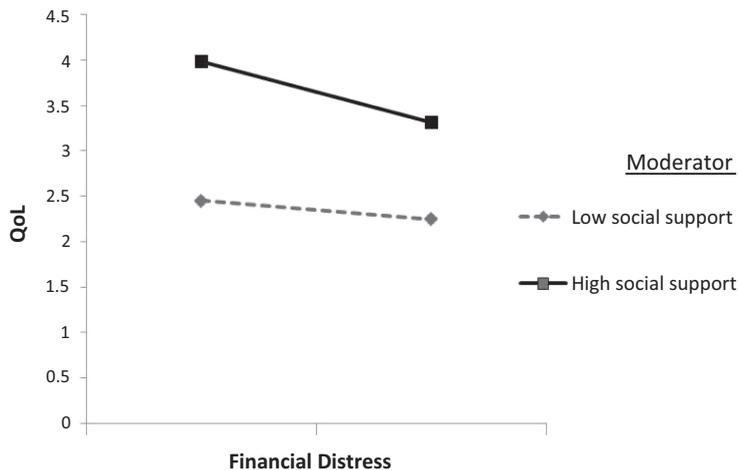**Table 3.**
The results of the
model assessment

Figure 2.
The indirect
relationship between
financial literacy and
QoL through financial
distress for different
levels of social support

above 3.71 (SD $= -0.0853$) and 3.54 (SD $= -0.963$) of the mean of social support, the moderated effect is significant at 0.05 and 0.1, respectively. Figure 3 illustrates the areas of social support that the conditional effect of financial distress on QoL is significant at 95% confidence level.

As shown, social support strengthened the negative relationship between financial distress and QoL. The model explained 16.32% of the variance of financial distress and 55.55% of the variance of QoL. Figure 4 illustrates the results.

Discussion

The findings of this study reveal that financial literacy is correlated with QoL of consumers struggling with cancer. In other words, consumers diagnosed with cancer who are more financially literate would have a higher QoL. Moreover, the results indicate that financial distress mediates the relationship between financial literacy and QoL. The results are even more interesting considering that the relationships between financial literacy with financial distress and QoL are significant after controlling for the effect of participants' wealth. As expected, consumers' economic condition enhances their QoL and this impact is through mitigating their financial distress. In other words, after removing the impact of wealth on financial distress and QoL, financial literacy still contributes to QoL of consumers facing unforeseen circumstances such as chronic diseases. Thus, financial literacy could be seen as a factor that reduces financial distress which itself is one of the natural consequences of low economic status.
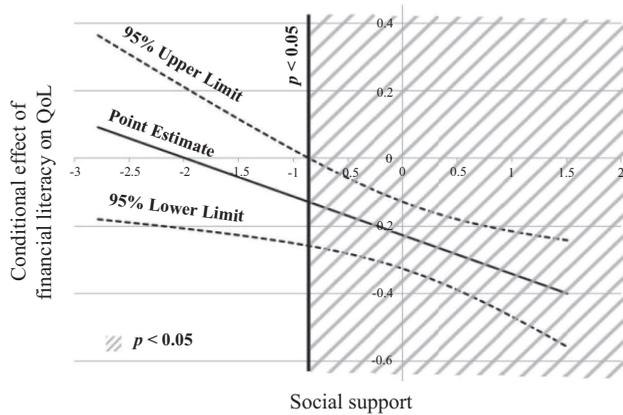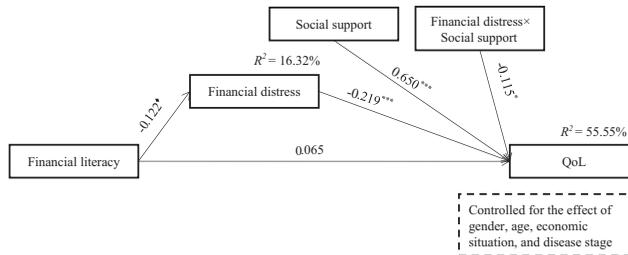
Figure 3.
Conditional effect of financial distress on QoL

Figure 4.
The results of the structural model assessment

Note(s): $\blacklozenge p < 0.1^{*}$, $p < 0.05^{***}$, $p < 0.001$

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The findings not only lend support to previous studies which linked financial literacy to health outcomes (Braun *et al.*, 2009) but also justify the mechanism. From the lens of the Friedman hypothesis, the results highlight the importance of financial literacy in smoothening consumers' consumption fluctuations in difficult times (Jappelli, 2005). This would help them reduce consumption fluctuations in critical periods of their life when they face unforeseen circumstances such as chronic diseases and as a result experience a higher QoL.

Consumers with a higher level of financial literacy may possess a set of skills and knowledge that enable them to make more informed financial decisions and overcome financial difficulties (Lusardi and Mitchell, 2014). More specifically, more financial literate consumers are more likely able to control their monthly expenses and make better use of their resources such as savings and assets. This empowers consumers to effectively manage their direct and indirect costs of the disease (Stolper and Walter, 2017) and be less worried about financial problems, which is translated to higher QoL (Mcnulty and Khera, 2015). In other words, more financial literate cancer consumers may feel less financially stressed and as a result, they may experience a higher QoL.

In terms of the direct costs, certain treatment and healthcare options may require a good understanding of financial impacts (Meyer and Hudak, 2016). Indeed, more financially literate consumers make better decisions about their healthcare insurance plans that would result in better health outcomes (James *et al.*, 2012). The results of a study by Carman *et al.* (2013) showed that knowledge of finance can provide consumers with a pathway a cost-efficient quality of care that in turn improve their health. In addition to the direct costs of the disease, the effects of cancer on employment and consumers' income can make them even more vulnerable (Mcnulty and Khera, 2015). The results of past studies showed that unemployment, retirement or disability due to disease are prevalent among consumers diagnosed with cancer (Shankaran *et al.*, 2017). As a result, many consumers fighting with cancer may consider refinancing or selling home, early use of retirement savings and borrowing to overcome the period of the crisis (Ramsey *et al.*, 2013). Furthermore, research consistently has shown that cancer consumers are at a higher risk for personal bankruptcy compared with the general population (Bernard *et al.*, 2011; Ramsey *et al.*, 2013; Shankaran *et al.*, 2012). Due to the advances in treatment, the survival rate of cancer patients has increased and many consumers would live for a number of years after a cancer diagnosis (Pahlevan Sharif and Ong, 2018). Therefore, making financial decisions at this stage tends to be more important than before and any poor financial decision because of inadequate financial literacy may have a deleterious impact on their QoL even in the future.

An implication of the findings is developing resources to educate consumers about direct and indirect costs of their care. This is more important for those with a lower level of financial literacy, which are mostly from lower social classes in the society (Shim *et al.*, 2010b). Consumers need to have a better understanding of the economic impacts of different clinical and treatment options proposed to them (Mcnulty and Khera, 2015). The mediation results have practical implications for improving QoL through intervention programs as well. While enhancing consumers' financial literacy is developed over time, reducing their financial distress can be addressed within a short timeline concurrently. Thus, in the meantime, to enhance cancer consumers' QoL, mitigating their financial distress through other factors such as providing consultation to make more informed financial decisions is recommended.

The results of investigating the role of social support in this study are twofold. First, the results are consistent with a large body of the literature on the beneficial effects of social ties on well-being (Cohen *et al.*, 2001; Spatuzzi *et al.*, 2016). The findings show that the perception of support toward chronic stressful experiences such as cancer provided by nonprofessionals (Cohen *et al.*, 2001) is beneficial to consumers' well-being and promotes their QoL. Indeed, psychological and social resources available to consumers with cancer may help them cope with the stress caused by the disease (Lincoln, 2000).

Second, surprisingly, this study indicates that social support strengthens the detrimental effect of financial distress on QoL. Although many research findings have repeatedly shown that the provision of social resources is health protective, there is empirical evidence that social relationships do not always lead to better QoL (Cohen *et al.*, 2001; Lincoln, 2000). By all means, comprehensive reviews acknowledge that the relationships between social relationships and well-being are complex (Cohen *et al.*, 2001). Review of social support in the context of illness highlights two types of adverse perceived support: One is receiving a particular support from the wrong person and the other is receiving non-helpful support from the correct person (Lincoln, 2000; Dunkel-Schetter, 1984; Rose, 1990). A study interviewing cancer patients revealed that in many cases the support is not materialized and even when it is, due to the incorrect understanding of consumers' needs and priorities; it is seen as inappropriate (Peters-Golden, 1982). Consequently, it can show a negative impact on consumers' well-being. Past studies also have highlighted the importance of the social support providers (Lieberman, 1982; Dunkel-Schetter, 1984). For example, while some piece of healthcare advice and information by family and friends might be misperceived, the same advice from doctors will be considered so helpful (Dunkel-Schetter, 1984).

The findings of the study suggest that perhaps consumers entangled with financial crisis due to high cost of medical treatment are in need of tangible financial support along with social support. It can be inferred that solely receiving of emotional support from the close circle of acquaintances with no financial support might be bothersome. Nevertheless, the above explanation does not imply unfavorable provision of social and emotional support. Despite the direct positive relationship between social support and QoL, emotional help and caring of others do not necessarily help consumers cope with the negative impacts of their financial difficulties. Furthermore, patients with less financial distress would perceive emotional support less irritating. Although provision of social support by family, friends and significant others promotes QoL of consumers diagnosed with cancer, it would reinforce the detrimental effects of financial distress on QoL when it does not address their financial burden.

The above discussed results have implications for improving QoL of consumers facing the stressful life event of cancer through providing social support. Interventions for families and friends on provision of skillfully provided social and emotional support are recommended (Dunkel-Schetter, 1984). Another implication is for social network members of cancer consumers to be aware of the detrimental effects of offering a high level of emotional support while the consumer suffers from a high level of economic strain such as difficulty paying bills, managing monthly expenses and lack of sufficient fund for medical treatment. Interventions for correct assessment of the needs and priorities of consumers diagnosed with chronic diseases are necessary to offer relevant support to them. Offering appropriate problem-solving assistance and guidance targeting financial burden of consumers might mitigate the negative impact of financial distress on QoL.

Although the scope of the current research is limited to the consumers who have been diagnosed with cancer in Iran, the findings can be used to improve our understanding of the impact of financial literacy on QoL of consumers with chronic diseases in other similar contexts. However, doing so requires cautious inference given the heterogeneous external conditions across countries. What can be said with greater certainty is the applicability of the findings to the wider population from which the sample has been derived from. Several reasons underlie this assertion. First, findings from the current research are in line with the work of other researchers outside of Iran that have examined related propositions. For example, past studies have shown that financial literacy could decrease the negative financial impacts of cancer diagnosis and treatment (Shankaran *et al.*, 2012), and that financial literacy has been found to be an important determinant of well-being amongst chronically ill patients (James *et al.*, 2012). Furthermore, as far as the specifics of the samples are concerned, most

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cancer patients are at risk of subjective experiences of financial distress, albeit to varying degrees (De Souza *et al.*, 2014; Carrera *et al.*, 2018). The current research thereby builds upon the axiom that financial distress has a negative impact on QoL of cancer patients (Barbaret *et al.*, 2019).

The current research however is not without its limitations. The cross-sectional design of this study does not allow for firm causal conclusions. Conducting longitudinal studies by collecting data at different points in time as well as experimental studies are recommended for future research although conducting an experimental study to manipulate social support is hard (Dunkel-Schetter, 1984). Moreover, conducting a qualitative study helps us understand these findings in more depth. Another limitation of this study is using a scale measuring general positive social and emotional support provided by family, friends and significant others. Future research is suggested to take a more balanced approach and investigate the association between social ties and QoL by including different dimensions and various sources of social support in the model and measures both positive and negative social interactions (Lincoln, 2000). Moreover, studying perceived appropriateness of social support, and relevance of source of type of support (Cohen *et al.*, 2000) is recommended.

Conclusion
The research consolidates existing research, revealing that more financial literate consumers diagnosed with cancer experience a higher QoL and this is because they perceive less financial distress. These results highlight the importance of financial literacy in managing direct and indirect costs of chronic diseases that in turn can improve consumers' QoL. Moreover, the present study indicates that while perceiving social and emotional support improves QoL of consumers with cancer, it strengthens the negative association between financial distress and QoL. Meanwhile, offering appropriate and relevant problem-solving support targeting financial burden of patients might mitigate the negative impact of financial distress on QoL. The findings of this study are of great relevance, as they shed more light on the underlying mechanism of the relationship between financial literacy and QoL among consumers diagnosed with cancer. This study provides support for interventions targeting financial literacy and perceived financial distress for consumers with chronic diseases. In the meantime, interventions for family and friends of patients addressing provision of social support as well as relevant and helpful support are recommended. These interventions would improve consumers' QoL through reducing perceived financial burden and weakening the negative relationship between financial distress and QoL.

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Appendix
Measurement questions

Financial literacy

(1) Numeracy: Suppose you had €100 in a savings account and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow? (1) More than €102; (2) Exactly €102; (3) Less than €102; (4) Do not know; (5) Refusal.

(2) Interest compounding: Suppose you had €100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have on this account in total? (1) More than €200; (2) Exactly €200; (3) Less than €200; (4) Do not know; (5) Refusal.

(3) Inflation: Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account? (1) More than today; (2) Exactly the same; (3) Less than today; (4) Do not know; (5) Refusal.

(4) Time value of money: Assume a friend inherits €10,000 today and his sibling inherits €10,000 three years from now. Who is richer because of the inheritance? (1) My friend; (2) His sibling; (3) They are equally rich; (4) Do not know; (5) Refusal.

(5) Money illusion: Suppose that in the year 2010, your income has doubled and prices of all goods have doubled too. In 2010, how much will you be able to buy with your income? (1) More than today; (2) The same; (3) Less than today; (4) Do not know; (5) Refusal.

Financial distress (COST: comprehensive score for financial toxicity)

(1) I feel financially stressed

(2) I am satisfied with my current financial situation

(3) I worry about the financial problems I will have in the future as a result of my illness or treatment

(4) I am frustrated that I cannot work or contribute as much as I usually do

(5) My cancer or treatment has reduced my satisfaction with my present financial situation

(6) I feel in control of my financial situation

(7) I am able to meet my monthly expenses

(8) I know that I have enough money in savings, retirement, or assets to cover the costs of my treatment

(9) I am concerned about keeping my job and income, including working at home

(10) I feel I have no choice about the amount of money I spend on care

(11) My out-of-pocket medical expenses are more than I thought they would be

Social support (multidimensional scale of perceived social support)

(1) There is a special person who is around when I am in need.

(2) There is a special person with whom I can share my joys and sorrows.

(3) My family really tries to help me.

(4) I get the emotional help and support I need from my family.

(5) I have a special person who is a real source of comfort to me.

(6) My friends really try to help me.

(7) I can count on my friends when things go wrong.

(8) I can talk about my problems with my family.

(9) I have friends with whom I can share my joys and sorrows.

(10) There is a special person in my life who cares about my feelings.

(11) My family is willing to help me make decisions.

(12) I can talk about my problems with my friends.

QoL (FACT-G: Functional Assessment of Cancer Therapy – General)

Physical well-being

(1) I have a lack of energy

(2) I have nausea

(3) Because of my physical condition, I have trouble meeting the needs of my family

(4) I have pain

(5) I am bothered by side effects of treatment

(6) I feel ill

(7) I am forced to spend time in bed

Social/family well-being

(1) I feel close to my friends

(2) I get emotional support from my family

(3) I get support from my friends

(4) My family has accepted my illness

(5) I am satisfied with family communication about my illness

(6) I feel close to my partner (or the person who is my main support)

(7) I am satisfied with my sex life

Emotional well-being

(1) I feel sad

(2) I am satisfied with how I am coping with my illness

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(3) I am losing hope in the fight against my illness

(4) I feel nervous

(5) I worry about dying

(6) I worry that my condition will get worse

Functional well-being

(1) I am able to work (include work at home)

(2) My work (include work at home) is fulfilling

(3) I am able to enjoy life

(4) I have accepted my illness

(5) I am sleeping well

(6) I am enjoying the things I usually do for fun

(7) I am content with the quality of my life right now

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