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Socioeconomic Factors Affecting Willingness to Pay for Non-Alcoholic Fatty Liver Care in Isfahan City

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A B S T R A C T

Background: Non-alcoholic fatty liver disease (NAFLD) is recognized as one of the most common metabolic diseases worldwide. Given the increasing prevalence of this disease and its serious complications, examining the willingness to pay for treatment costs is of particular importance. This study aims to identify and analyze factors affecting the willingness to pay for treatment costs among patients with fatty liver disease.

Methods: This descriptive-analytical study was conducted using a regression model. Patients diagnosed with NAFLD who referred to the lifestyle clinic in Isfahan were studied. Data were collected using a standardized willingness-to-pay questionnaire and analyzed using $SPSS_{25}$ and statistical tests including Chi-square and multivariate logistic regression.

Results: The mean willingness-to-pay score was 3.25. Findings showed that variables such as age (P-value=0.035), gender (P-value=0.045), income (P-value=0.003), and basic insurance coverage (P-value=0.001) significantly affected willingness to pay (WTP). Moreover, the study indicated that WTP significantly decreased after a 20% tariff increase for NAFLD care services (P-value=0.003).

Conclusion: There was a relative WTP for these services within the studied community, and socioeconomic factors played a critical role in determining this willingness. Moreover, the significant decrease in WTP following tariff hikes reflected consumer sensitivity to price changes. It is recommended that future studies delve deeper into these factors and the long-term impacts of pricing changes on access and utilization.

Keywords: Health Expenditure, Patient Behavior, Willingness to Pay, Non-Alcoholic Fatty Liver Disease, Isfahan

Introduction

Non-alcoholic fatty liver disease (NAFLD) is one of the most common causes of chronic liver disease worldwide (1). Its incidence is estimated at about 20 new cases annually per 10,000 people. Some studies have indicated that peak incidence occurs in individuals in their 60s (2). The global prevalence ranges between 3% to 25% across countries (3). Studies have suggested that increasing prevalence in Asian countries is primarily due to lifestyle changes such as high-fat diets, low physical activity, obesity, and type 2 diabetes. For instance, hepatic steatosis alone occurs in 16% to 30% of the general population (4). In Iran, NAFLD prevalence ranges from 2.9% to 7.1% depending on the population studied (5-8).

Beyond clinical and medical aspects, the economic burden and healthcare costs associated with NAFLD are critical for health system planning. NAFLD affects roughly 25% of the global population and is expected to impose significant medical and societal costs (9). Direct medical costs include diagnosis, treatment, and disease management, encompassing physician visits,

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diagnostic tests (e.g., blood tests, imaging, liver biopsy), medications, hospitalization for complications (e.g., liver failure, liver cancer), and liver transplantation in severe cases (10-12).

However, comprehensive cost-of-illness studies remain limited. For example, a French study estimated annual hospital costs per patient at €7,736, increasing with disease severity (13). In Italy, inpatient care cost averaged €8,762 per patient (14). Other studies estimated costs between €354 to €1,163 per patient across several European countries (15). Cost-of-illness studies typically aim to identify the economic impact of a disease on society and healthcare systems through type and magnitude of incurred costs (16).

In addition to direct costs, assessing individuals' willingness to pay (WTP) for treatment offers further insight. WTP quantifies perceived value of health services and is often used in health economics to inform resource allocation (17). This can be assessed using revealed preferences (market behavior) or stated preferences (direct surveys) (18). WTP is widely applied in economic evaluations of health services. Although various Iranian (19-21) and international (22-29) studies have examined WTP in healthcare, limited research exists specifically for NAFLD. Thus, this study aimed to determine WTP and related socioeconomic factors among NAFLD patients.

Materials and Methods

This cross-sectional analytical study used both literature review and field survey. Data were collected in 2023 via a structured questionnaire. The statistical population included all NAFLD patients who had been diagnosed at least one year prior and referred to the Iranian Health Specialty Clinic in Isfahan. A census sampling method was employed, including all 102 eligible patients unless they opted out.

To evaluate WTP before and after a service tariff increase during two three-month of care periods, data were gathered using the same WTP questionnaire. The care package included physician visits, diagnostic tests, imaging, nutrition counseling, body analysis, psychological counseling, physical activity consultation, and lifestyle education, each with specified tariffs that were raised by 20% in the second period. A total of 102 patients completed the questionnaire (39 before and 63 after the tariff hike).

The questionnaire had two parts: demographic data (including 19 items covering age, gender, marital status, education, employment, household size, income, expenses, insurance, duration of illness, and clinic service use) and WTP assessment (10 Likert-scale items from "strongly disagree" to "strongly agree"). Higher scores indicated greater WTP. Validity was confirmed by experts and reliability was measured by Cronbach's alpha 0.85 (30).

Data were analyzed using $SPSS_{25}$ with descriptive statistics, chi-square tests, and logistic regression. Since WTP was rated on a 1–5 scale, a score of 3 was used as the threshold: scores above 3 indicated willingness, and below 3 indicated unwillingness.

Results

Most respondents aged 31–40 (24.5%), with the fewest over 60 (12.7%). The mean age was 44.5 years (SD=13.5). Totally 42% were male; 84.4% were married and most had a high school diploma (32.4%). Employment status showed that 39.2% were unemployed due to the older age and higher female participation. The majority had a household income of 100–150 million IRR (42.2%) and expenses in the same range (43%). The most common insurance was Social Security (65.7%), with 62% also holding supplementary insurance (Table 1).

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Table 1. Demographics

Variable		Frequency	Percent	Variable		Frequency	Percent
Age	<30	18	17.6	Employment status	Unemployed	40	39.2
	31-40	25	24.5		Employed	33	32.4
	41-50	23	22.5		Retired	29	28.4
	51-60	23	22.5	Household income	<100 million IRR	12	11.8
	60<	13	12.7		10-15 million IRR	43	42.2
Gender	Male	43	42.2		15-20 million IRR	25	24.5
	Female	59	57.8		>20 million IRR	22	21.1
Marital	Single	18	17.6	Household expenses	<100 million IRR	18	17.6
	Married	84	82.4		10-15 million IRR	44	43.1
Education	Illiterate	10	9.8		>15 million IRR	40	39.2
	High school Diploma	33	32.4	Insurance	Social Security	67	65.7
	Associate degree	22	22		Iranian insurance	15	14.7
	Bachelor	12	11		Army	9	8.8
	Master and PhD	25	24.5		Banks	3	2.9
					None	8	7.8

A 10% decrease (0.34 points) in mean WTP score was observed after tariff increase. Paired t-test results confirmed a statistically significant difference between two periods (P-value = 0.003) (Table 2).

Table 2. WTP before and after tariff increases

Group	Number of respondents	Mean score	SD	Mean error SD	Paired T-test		
Before	39	3.42	0.490	0.078	P	Mean difference	Std. Error Difference
After	63	3.08	0.572	0.072	0.003	0.334	0.110

Chi-square and Cramer's V tests showed significant associations between WTP and the variables: age (P-value =0.035), gender (P-value =0.045), income (P-value =0.003), and basic insurance (P-value =0.001). The strength of associations ranged from moderate to high (Table 3).

Table 3. Relationship between independent variables and WTP

Relationship between independent and dependent variables	Item	P	df	sig
Age and WTP	Chi-square	3.468	1	0.035
	Likelihood ratio	3.954	1	0.031
	Cramer's V	0.363		0.003
	Valid Items	102		
Gender and WTP	Chi-square	9.128	1	0.045
	Likelihood ratio	8.954	1	0.039
	Fisher			0.045
	Cramer's V	0.073		0.045
	Valid Items	102		
Household income and WTP	Chi-square	8.309	2	0.003
	Likelihood ratio	8.573	2	0.003
	Cramer's V	0.373		0.005
	Valid Items	102		
Insurance and WTP	Chi-square	8.569	4	0.001
	Likelihood ratio	8.702	4	0.001
	Cramer's V	0.463		0.035
	Valid Items			

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Overall, the results obtained from chi-square correlation test indicated various relationships between independent variables and dependent variable, "WTP" in patients with NAFLD. Variables that showed a significant association included age, gender, income level, and insurance status. Subsequently, the relationship between these variables was further analyzed using regression testing (Table 4).

Table 4. Regression results

Variable	Age 1	Age 2	Age 3	Age 4	Age 5	Income 1	Income 2	Income 3	Income 4	Male	Female	Insurance 1	Insurance 2	Insurance 3	Insurance 4	Insurance 5
Coefficient	1.23	0.48	0.36	0.14	0.34	0.11	0.49	0.78	0.31	0.89	1.39	2.21	0.67	0.18	0.14	0.08
sig	0.24	0.01	0.53	0.01	0.00	0.00	0.23	0.01	0.04	0.00	0.00	0.03	0.00	0.41	0.00	0.00

- Age: Increased age correlated with decreased WTP.
- Income: Higher income groups had higher WTP.
- Gender: Males showed lower WTP than females.
- Insurance: Group 1 insurance holders had higher WTP compared to other insurance types.

Discussion

WTP for healthcare services is a critical factor in understanding how individuals value healthcare and their ability to access it. This concept is particularly significant in low- and middle-income countries, where out-of-pocket expenditures are substantial. Various studies have examined determinants and levels of WTP across different health services and regions, highlighting a complex interplay of socio-economic and demographic factors (26,27). The present study explores social and demographic factors affecting WTP for fatty liver disease care.

The findings indicated that several variables, including age, gender, income level, and basic insurance status, significantly affected WTP for fatty liver care. Moreover, the results showed that the WTP for NAFLD care decreased significantly following an increase in service tariffs.

While WTP for healthcare is affected by various factors, it is often lower than the actual cost of services, particularly in low-income settings. This discrepancy underscores the need for targeted interventions, such as financial subsidies and educational campaigns, to enhance access and equity in healthcare (5). Moreover, understanding determinants of WTP can help policymakers design more effective health financing strategies that consider the socio-economic realities of different populations.

Based on the findings of this study, individuals in different age and gender groups exhibited different behaviors in response to healthcare costs due to cultural, economic, and social differences. Younger individuals and those with higher incomes may be more willing to pay for medical care, whereas older individuals or those with lower incomes may have reduced WTP due to financial constraints. Furthermore, the study highlighted that increased healthcare tariffs significantly affected WTP. This suggests that rising costs may lead to reduced access to medical services, particularly in cases where basic insurance coverage is insufficient. This decline in WTP may ultimately exacerbate health problems and increase the burden of disease in society.

The results of this study emphasize the need for policymakers and decision-makers to consider the socio-economic variables affecting WTP and develop strategies to facilitate access to healthcare services. Economic effects on different population segments should also be considered in financial planning and service pricing. Ultimately, raising awareness and education about liver diseases and prevention methods could contribute to an increased WTP for medical care and improved healthcare outcomes.

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The findings indicated that WTP increased with income. WTP was minimal among individuals with an income below 10 million tomans but reached its maximum in groups earning above 15 million tomans. This suggests that higher-income patients are more willing to cover treatment costs. Therefore, implementing supportive policies for lower-income patients could enhance their access to healthcare and prevent complications arising from lack of treatment. A study on willingness to purchase health insurance found that household income significantly affected willingness to buy coverage (31), aligning with the findings of the present study. However, another study on dental services did not find a significant effect of income on WTP (32). Jafari et al. (30) identified that education level, employment status, actual income, disease history, health status, frequency of doctor visits, actual healthcare costs, and satisfaction with healthcare services are influential factors in WTP. Cerda et al. (33) also found that income level, education, and having a family member affected by COVID-19 increased the likelihood of individuals paying more for vaccines. The findings of the present study align with these observations. Studies conducted in other countries have identified age, marital status, employment status, and income level as key determinants of WTP. For instance, younger individuals and those with higher incomes generally exhibited greater WTP for healthcare services (28,27). Another study found that factors such as employment status, marital status, family history of medical care, awareness level, medical history, distance to healthcare centers, and wealth index affected WTP (29).

Furthermore, the results indicated that men had a lower WTP for fatty liver disease care compared to women (1.39). This difference may be attributed to cultural and economic factors shaping financial behaviors across genders. Catma et al. (34) reported similar findings, showing that women have a higher WTP for vaccination services than men. In this regard, tailored financial and medical counseling for men could enhance their WTP.

Age has also been identified as a significant factor affecting WTP. The findings showed that WTP decreased with age, with older patients being less willing to cover treatment costs. This could be related to financial conditions and perceptions of illness. Consequently, designing specific treatment programs for different age groups is essential. Faisalprapa et al. (35) found that WTP for screening services increased among older individuals due to cost-effectiveness considerations. However, this finding contradicts the results of the present study.

Basic insurance status was also found to be a key determinant of WTP, consistent with the findings of Mohammadi et al. (36). Their study highlighted that basic insurance, along with household income, risk aversion, employment status, and marital status, significantly affected WTP for supplemental health insurance services.

Limitations

Given that this study was conducted within a limited population in Isfahan, caution should be exercised when generalizing the results. However, the findings provide valuable insights for policymakers.

Conclusion

Various factors can affect patients' WTP for NAFLD care, including age, gender, household income level, and basic insurance coverage. Moreover, an increase in service tariffs has led to a decline in WTP. These findings highlight the importance of improving insurance coverage for healthcare services and implementing educational programs to raise awareness among patients across different age groups and cultural backgrounds.

It is recommended that policy strategies in education, finance, and innovative technologies be considered to enhance WTP. Such measures can assist healthcare managers and providers in improving service quality and increasing patient satisfaction. These findings contribute to the development of effective health policies and improved access to medical services while addressing the specific needs of patients.

Ethical considerations

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Arman Kolahdouzan (2024), No. 162950236, approved at the meeting held on December 6, 2024, at the Islamic Azad University, Tehran Province. The research team ensured participant anonymity to safeguard privacy and minimize any potential consequences. All sources have been properly cited to maintain academic integrity and avoid plagiarism.

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Authors' contributions

A.K, L.R and S.B contributed to the design of the study; A.K collected the data; L.R and S.B analyzed and interpreted the data; A.K wrote the first draft of the manuscript; L.R reviewed the manuscript; and S.B critically revised the manuscript. All authors read and approved the submitted version.

Conflict of interests

The authors declared no conflict of interests.

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References

1. Smith, B. W., & Adams, L. A. (2011). Non-alcoholic fatty liver disease. *Crit Rev Clin Lab Sci, 48*(3), 97-113. doi:10.3109/10408363.2011.596521
2. Tsuneto, A., Hida, A., Sera, N., Imaizumi, M., Ichimaru, S., Nakashima, E., Akahoshi, M. (2010). Fatty liver incidence and predictive variables. *Hypertens Res, 33*(6), 638-643.
3. Chen, Z.-w., Chen, L.-y., Dai, H.-l., Chen, J.-h., & Fang, L.-z. (2008). Relationship between alanine aminotransferase levels and metabolic syndrome in nonalcoholic fatty liver disease. *J Zhejiang Univ Sci B, 9*(8), 616.
4. Festi, D., Colecchia, A., Sacco, T. a., Bondi, M., Roda, E., & Marchesini, G. (2004). Hepatic steatosis in obese patients: clinical aspects and prognostic significance. *Obes Rev, 5*(1), 27-42.
5. Alavian, S. M., Mohammad-Alizadeh, A. H., Esna-Ashari, F., Ardalan, G., & Hajarizadeh, B. (2009). Non-alcoholic fatty liver disease prevalence among school-aged children and adolescents in Iran and its association with biochemical and anthropometric measures. *Liver Int, 29*(2), 159-163.
6. Merat, S., Yarahmadi, S., Tahaghoghi, S., Alizadeh, Z., Sedighi, N., Mansournia, N., Malekzadeh, R. (2009). Prevalence of fatty liver disease among type 2 diabetes mellitus patients and its relation to insulin resistance. *Middle East journal of digestive diseases, 1*(2), 74-79.
7. Rogha, M., Najafi, N., Azari, A., Kaji, M., Pourmoghaddas, Z., Rajabi, F., et al. (2011). Non-alcoholic Steatohepatitis in a Sample of Iranian Adult Population: Age is a Risk Factor. *International journal of preventive medicine, 2*(1), 24-27.
8. Sohrabpour, A., Rezvan, H., Amini-Kafiabad, S., Dayhim, M., Merat, S., & Pourshams, A. (2010). Prevalence of Nonalcoholic Steatohepatitis in Iran: A Population based Study. *Middle East journal of digestive diseases, 2*(1), 14-19.
9. Darbà, J. (2022). Direct medical costs of non-alcoholic fatty liver disease in Catalonia at the hospital level: a retrospective multicenter study. *Expert Rev Pharmacoecon Outcomes Res, 22*(2), 341-349. doi:10.1080/14737167.2021.1890586
10. Alam, S., Islam Alin, M. S., Begum, F., Fahim, S. M., Tasnim, Z., & Alam, M. M. (2023). Estimating the cost of illness of non-alcoholic fatty liver disease in Bangladesh. *JGH Open, 7*(9), 629-635. doi:10.1002/ jgh3.12960
11. Morgan, A., Hartmanis, S., Tsochatzis, E., Newsome, P. N., Ryder, S. D., Elliott, R., Pezzullo, L. (2021). Disease burden and economic impact of diagnosed non-alcoholic steatohepatitis (NASH) in the United Kingdom (UK) in 2018. *Eur J Health Econ, 22*(4), 505-518. doi:10.1007/s10198-020-01256-y
12. Schattenberg, J. M., Lazarus, J. V., Newsome, P. N., Serfaty, L., Aghemo, A., Augustin, S., et al. (2021). Disease burden and economic impact of diagnosed non-alcoholic steatohepatitis in five European countries in 2018: A cost-of-illness analysis. *Liver Int, 41*(6), 1227-1242. doi:10.1111/liv.14825
13. Boursier, J., Shreay, S., Fabron, C., Torreton, E., & Fraysse, J. (2020). Hospitalization costs and risk of mortality in adults with nonalcoholic steatohepatitis: Analysis of a French national hospital database. *EClinicalMedicine, 25*, 100445. doi:10.1016/j.eclinm. 2020.100445

[DOI: 10.18502/jebhpme.v9i1.19417]

14. Petta, S., Ting, J., Saragoni, S., Degli Esposti, L., Shreay, S., Petroni, M. L. et al. (2020). Healthcare resource utilization and costs of nonalcoholic steatohepatitis patients with advanced liver disease in Italy. *Nutr Metab Cardiovasc Dis, 30*(6), 1014-1022. doi: 10.1016/j.numecd.2020.02.016
15. Younossi, Z. M., Blissett, D., Blissett, R., Henry, L., Stepanova, M., Younossi, Y., et al. (2016). The economic and clinical burden of nonalcoholic fatty liver disease in the United States and Europe. *Hepatology, 64*(5), 1577-1586. doi:10.1002/hep. 28785
16. Bashiri, F., Amraei, M., & Faraji-Khiavi, F. (2023). Direct Medical Expenses of Cancer Patients Undergoing Surgery in Ahvaz Teaching Hospitals. *Depiction of Health, 14*(2), 238-246. [In Persian]. doi:10.34172/doh.2023.18
17. Birch, S., & Donaldson, C. (2003). Valuing the benefits and costs of health care programmes: where's the 'extra' in extra-welfarism? *Soc Sci Med, 56*(5), 1121-1133. doi:10.1016/s0277-9536(02)00101-6
18. Nanna, A. W. I. (2011). *Health insurance in developing countries: willingness to pay for health insurance in Thailand using discrete choice experiment methods*.
19. Adeli, O. A., & Rahimi kah kashi, S. (2021). Estimating willingness to pay for the Covid-19 vaccine using the conditional valuation method. *Payesh (Health Monitor) Journal, 20*(2), 223-236. [In Persian]. doi:10.52547/payesh.20.2.223
20. Darvishi, A., Goudarzi, R., Habib Zadeh, V., & Barouni, M. (2018). Cost-benefit analysis of pharmaceutical treatments of infertility using willingness to pay approach. *Journal of Shahid Sadoughi University of Medical Sciences, 26*(3), 245-256. [In Persian].
21. Rahmani, S., & Nosratnezhad, S. (2019). The Impact of Information on Women's Willingness to Pay for Mammography Screening. *Hakim Research Journal, 22*(1), 62-67. [In Persian].
22. Agada-Amade, Y. A., Ogbuabor, D. C., Obikeze, E., Eborieme, E., & Onwujekwe, O. E. (2024). Willingness to pay for haemodialysis among patients with chronic kidney disease in Abuja, Nigeria. *BMC Nephrol, 25*(1), 29. doi:10.1186/s12882-024-03459-4
23. Akande, O. W., & Akande, T. M. (2024). Human Papillomavirus Vaccination amongst Students in a Tertiary Institution in North Central Nigeria: A Cross-sectional Study on Sociodemographic Factors Associated with Its Awareness, Uptake and Willingness to Pay. *Niger Postgrad Med J, 31*(1), 14-24. doi:10.4103/npmj.npmj_265_23
24. Cho, D., & Jo, C. (2015). Preference elicitation approach for measuring the willingness to pay for liver cancer treatment in Korea. *Clin Mol Hepatol, 21*(3), 268-278. doi:10.3350/cmh.2015.21.3.268
25. Gaffan, N., Kpozehouen, A., Degbey, C., Ahanhanzo, Y. G., & Paraïso, M. N. (2024). Understanding Households' Willingness to Pay for Improved Sanitation Services in Benin: A Study Protocol. *Environ Health Insights, 18*, 11786302241228954. doi:10.1177/11786302241228954
26. Rajamoorthy, Y., Wagner, A. L., Kumaran, V. V., Munusamy, S., Taib, N. M., Tin, O. H., et al. (2023). Parents' willingness to pay for COVID-19 vaccination for children in Malaysia using the contingent valuation method. *Narra J, 3*(3), e187. doi:10.52225/narra.v3i3.187.
27. Bayked, E. M., Assfaw, A. K., Toleha, H. N., Zewdie, S., Biset, G., Ibirongbe, D. O., et al. (2024). Willingness to pay for National Health Insurance Services and Associated Factors in Africa and Asia: a systematic review and meta-analysis. *Frontiers in Public Health*, *12*, 1390937.
28. Thsehla, E., Hongoro, C., Miot, J., Kgasi, K., Marinda, E., Maramba, E., et al. (2024). Factors Associated with Willingness to Pay for Primary Health Care Services in South Africa: A Cross-Sectional Survey of Medical Schemes Members. *Health Services Insights*, *17*, 11786329241274479.
29. Belete, G. T., & Walle, Y. (2023). Willingness to pay for medical care and its determinants in private health care facilities among Gondar city residents, Northwest Ethiopia: Cross sectional study. *Heliyon*, *9*(11).
30. Jafari Samimi, A., Karimi potanlar, s., Mohammadi, T., & Tatar, M. (2019). Estimating willingness to pay for supplementary health insurance; Applications of the contingent valuation method and logit regression model. *Journal of Iranian Economic Issues, 6*(1), 61-80. [In Persian]. doi:10.30465/ce.2019.4918
31. Askary M, Rajabi M, Tofighi S, Sharifdoust M, Hafezi B. Willingness to Pay of Informal Job Workers for Health Insurance in Isfahan City, Iran. Iran J Health Insur 2024; 7 (1) :42-49
32. Maryam Moeeni, Shekoofeh sadat Momahhed, Shirin Nosratnejad, Saeed Karimi. Households'

[DOI: 10.18502/jebhpme.v9i1.19417]

Willingness to Pay for Dental Insurance: Application of Open-ended Question Method. Hakim 2016; 19 (3) :163-169

33. Cerda, A. A., & García, L. Y. (2021). Willingness to Pay for a COVID-19 Vaccine. *Appl Health Econ Health Policy, 19*(3), 343-351. doi:10.1007/s40258-021-00644-6
34. Catma, S., & Varol, S. (2021). Willingness to Pay for a Hypothetical COVID-19 Vaccine in the United States: A Contingent Valuation Approach. *Vaccines (Basel), 9*(4). doi:10.3390/vaccines9040318
35. Phisalprapa, P., Supakankunti, S., Charatcharoenwitthaya, P., Apisarnthanarak, P., Charoensak, A., Washirasaksiri, C., et al. (2017). Cost-effectiveness analysis of ultrasonography screening for nonalcoholic fatty liver disease in metabolic syndrome patients. *Medicine (Baltimore), 96*(17), e6585. doi:10.1097/ md.0000000000006585
36. Mohammadi B, Goudarzi R, Amiresmaili MR, Barouni M. Measuring Willingness to Pay for Supplemental Health Insurances by Contingent Value Method in Kerman . Hakim 2015; 18 (2) :130-138.

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