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RESEARCH ARTICLE

Socioeconomic status is the main predictor of the demand for voluntary health insurance in Croatia

Klara Muslim[1], Nensi Bralić[2]

[1]Independent researcher, Zagreb, Croatia

[2]Department of Research in Biomedicine and Health, University of Split School of Medicine, Split, Croatia

Correspondence to:
Nensi Bralić
Department of Research in Biomedicine and Health, University of Split School of Medicine, Šoltanska 2, 21000 Split, Croatia
nensi.bralic@mefst.hr

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Aim: To explore economic, demographic and personal factors influencing the demand for voluntary health insurance in the Republic of Croatia.

Methods: A cross-sectional survey was conducted using a 19-item online questionnaire. The questionnaire was distributed to participants using convenience and snowballing sampling strategies. A logistic regression model was used to estimate the association of selected determinants with the demand for voluntary health insurance.

Results: A total of 203 participants completed the questionnaire (age range 24-42) A statistically significant association was found between higher insurance policy sales price (odds ratio (OR)=1.016, 95% confidence interval (CI)=1.002-1.031), increased awareness of healthy diet (eating habits) (OR=1.768, 95% CI=1.100-2.841) and buying a voluntary health insurance policy. People in a higher income class (OR=0.594, 95% CI=0.364-0.970) and with a good subjective perception of personal health status (OR=0.454, 95% CI=0.232-0.889) were less likely to buy a voluntary health insurance policy. Also, the demand for voluntary health insurance decreased with age (OR=0.924, 95% CI=0.873-0.978), with older participants being less likely to buy voluntary health insurance than younger ones.

Conclusion: The choice to buy a voluntary health insurance policy largely correlates with an individual's socioeconomic status in today's society. Older participants with a higher income and good eating habits are less likely to buy a voluntary health insurance policy. At the same time, younger adults with lower incomes and poorer health are more likely to decide to acquire a voluntary health insurance policy.

Keywords: voluntary health insurance; policy users; determinants of demand; Croatia

Introduction

The healthcare system in the Republic of Croatia is composed of mandatory and voluntary health insurance. Voluntary health insurance is additionally divided into supplementary, complementary and private insurance. Supplementary and complementary health insurances are non-life insurances that offer their users better healthcare services. Policies for voluntary insurance are chosen separately, depending on the preferences of the insured person [1].

There are several factors influencing an increased need for medical services in Croatia. It is primarily attributed to significant growth in the proportion of the elderly population and an increase in the number of early-retired unable-to-work people with additional medical needs [2, 3]. Undeniably, those factors generate financial losses to the healthcare system because there is immense pressure on the social insurance and state budget to cover those costs [4]. Many healthcare system reforms have been implemented to tackle that issue. As a result, mandatory and voluntary health insurances are now the fundamental insurances in the healthcare system in Croatia [5]. A new law on health insurance was passed in 2002, introducing voluntary health insurance to limit the coverage of universal healthcare services and increase the income of the Croatian Health Insurance Fund [6]. Voluntary health insurance, in many forms, complements mandatory health insurance [7]. However, voluntary health insurance became a burden for the insurers as they were now the ones to cover the additional costs [5]. An analysis of citizens' satisfaction with the Croatian healthcare system, a study on characteristics of voluntary health insurance and its economic effects, and a comparative analysis of the Croatian market and the markets of selected European Union countries showed that the Croatian market is underdeveloped compared to EU members [8-10]. The most critical determinants for purchasing a voluntary health insurance policy are the level of education and the urbanisation of the place of residence.

As the cost of medical care increases, so does the demand for health insurance [11]. The key variable in assessing the demand for voluntary health insurance is self-assessment of health, with risk-averse people buying voluntary health insurance more often [12]. Similarly, the demand for private health insurance positively correlates with income, age, education and risk aversion [13]. Cooper and John believe that a sick person is willing to pay any insurance price, but this is limited by the income [14]. This points to the need to redesign the health insurance program to make it accessible to as many people as possible, especially the poorest [15]. Economic circumstances in Croatia determine the interest in voluntary health insurance policies. The total gross premiums of health insurance policies have a recorded an increase of as much as 58.7% in recent years. The decrease in the premiums in the Republic of Croatia occurred during the economic crisis (2009–2013), which led to a drop in demand for voluntary health insurance policies. The highest growth in the last two years (2015-2017) was recorded by the shares of supplementary health insurance premiums of 19.23%, while shares for the additional health insurance premiums have a negative trend of 10.68% [16].

Given the importance of health insurance issues and the demand for health insurance, this study aimed to gain new knowledge about the influence of various factors on the

demand for voluntary health insurance policies. The aim of the study was to investigate how economic, demographic and social factors affect the decision to purchase voluntary health insurance.

Methods

Study design and settings

A quantitative cross-sectional study using an online questionnaire was conducted from November 2018 to January 2019.

Participants

The target population were individuals over 15 years of age that were not enrolled in secondary school at the time of the study. The questionnaire was distributed to participants using convenience sample of first authors' colleagues, acquaintances and relatives and further snowballing sampling from these contacts.

Data collection

An online questionnaire consisting of 19 questions was created using the Google Forms platform (**Appendix 1**). The survey was anonymised and used both closed and open-ended questions. The link to the survey was distributed to the participants using electronic mail and social media.

Statistical analyses

We used frequencies and percentages to present participants' categorical demographic data. Numerical data were described with medians (Md) and interquartile range (IQR). Logistic regression was performed using the Statistical Package for the Social Sciences (SPSS) version 26.0 (IBM Corp., Armonk, N.Y., USA) for Windows for the statistical analysis. We report odds ratios (OR), 95% confidence intervals (CI), logistic regression coefficient (B), standard error (S.E.) and the rating scale (Wals). Statistical significance was set at α=0.05.

Results

A total of 203 participants completed the online questionnaire and were included in the analysis. Participants were primarily women (60.6%), and the median age for 200 participants was 29 years (IQR=24-42).

Participants were mainly employed, completed secondary school and lived in a city. The demographic characteristics of the participants are presented in **Table 1** and **Table 2**.

Table 1. Demographic characteristics of the participants (n=203)

Variables		Number (%)
Women		123 (60.6)
Age (median, interquartile range) (n=200)		29 (24-42)
Working status (n=202)	Employed	144 (70.9)
	Unemployed	15 (7.4)
	Student	36 (17.7)
	Retired	7 (3.5)
Education level (n=201)	Lower education	2 (1.0)
	Secondary school	98 (48.3)
	College	55 (27.1)
	University degree	35 (17.2)
	Postgraduate degree	11 (5.4)
Marital status (n=200)	Married	89 (43.8)
	Divorced	3 (1.5)
	Extramarital union	33 (16.3)
	Single	75 (36.9)
Number of children (n=181)	Zero	98 (48.3)
	One	23 (11.3)
	Two	43 (21.2)
	Three	16 (7.9)
	Four	1 (0.5)
Place of residence (n=202)	City	110 (54.2)
	Suburbs	70 (34.5)
	Village	19 (9.4)
	Island	3 (1.5)
Healthy eating habits	Never	2 (1.0)
	Almost never	16 (7.9)
	Sometimes	66 (32.5)
	Often	67 (33.0)
	Almost always	43 (21.2)
	Always	9 (4.4)
Fast food eating habits	Never	13 (6.4)
	Almost never	40 (19.7)
	Sometimes	116 (57.1)
	Often	29 (14.3)
	Almost always	2 (1.0)
	Always	3 (1.5)
Health status self-assessment	Bad	3 (1.5)
	Good	74 (36.5)
	Very good	89 (43.8)
	Excellent	37 (18.2)
Physical exercise habits	Never	22 (0.8)
	Almost never	48 (23.6)
	Sometimes	69 (34.0)
	Often	39 (19.2)
	Almost always	15 (7.4)
	Always	10 (4.9)
Smoking habits	Yes	92 (45.3)
	No	95 (46.8)
	Occasionally	16 (7.9)

Table 2. Economic characteristics of the participants (n=203)*

Variables		Number (%)
Health institutions taking voluntary insurance (n=201)	Yes	177 (87.2)
	No	24 (11.8)
Having supplementary health insurance (n=201)	Yes	160 (78.8)
	No	41 (20.2)
Having additional health insurance (n=196)	Yes	33 (16.3)
	No	163 (80.3)
Monthly income (n=201)	Under €132	24 (11.8)
	€133-€464	27 (13.3)
	€465-€796	87 (42.9)
	€797-€1,327	47 (23.2)
	Over €1,328	16 (7.9)
Level of wealth (n=199)	Under €1,327	64 (31.5)
	€1,328-€6,636	48 (23.6)
	€6,637-€13,272	30 (14.8)
	Over €13,273	57 (28.1)
Cost of voluntary health insurance policy premium (€) (Md, IQR) (n=125)		9.29 (9.16 to 9.29)
Acceptable cost of voluntary health insurance policy premium for those who do not have voluntary health insurance (€) (Md, IQR) (n=32)		6.64 (5.31 to 7.96)

*Abbreviations: Md – median, IQR – interquartile range.

Factors influencing the demand for voluntary health insurance

Factors that do not influence the demand for voluntary health insurance were as follows: wealth (P=0.054), level of education (P=0.097), gender (P=0.265), marital status (P=0.721), number of children (P=0.823), place of residence (P=0.593), smoking habits (P=0.066) and physical exercise habits (P=0.849) (**Table 3**). Thirteen factors were included in the logistic regression, describing 26.1% of the variance.

There was a statistically significant association between the policy's price and demand for it (P=0.022).

With the increase in income and purchasing power, individuals will buy insurance less because they think that they can pay the costs of treatment in case of illness with their income (P=0.037).

Also, the demand for voluntary health insurance decreased with age (P=0.007), with the upper half of young adults being less likely to buy voluntary health insurance than the lower half.

Those individuals that assess their health status as being impaired tend to develop an aversion to risk. That can lead to an increase in acquiring health insurance, so they could more easily finance treatment costs in case of illness (P=0.021).

Individuals who take care of their eating habits are not prone to risk and will want to ensure their health (P=0.019) (**Table 3**).

Table 3. Factors influencing the demand for voluntary health insurance policies*

Influencing factors	B	S.E.	Wals	*P*	OR	95% CI for OR	
						Lower	Upper
Selling price	0.016	0.007	5.241	0.022	1.016	1.002	1.031
Income	-0.521	0.250	4.337	0.037	0.594	0.364	0.970
Wealth	0.432	0.224	3.721	0.054	1.540	0.993	2.389
Gender	-0.540	0.485	1.241	0.265	0.583	0.225	1.507
Age	-0.079	0.029	7.329	0.007	0.924	0.873	0.978
Education	0.480	0.289	2.760	0.097	1.616	0.917	2.846
Marital status	0.185	0.518	0.127	0.721	1.203	0.436	3.322
Number of children	0.063	0.282	0.050	0.823	1.065	0.613	1.851
Place of residence	0.447	0.837	0.285	0.593	1.564	0.303	8.063
Healthy eating	0.570	0.242	5.548	0.019	1.768	1.100	2.841
Health status	-0.790	0.343	5.310	0.021	0.454	0.232	0.889
Physical activity	-0.038	0.197	0.036	0.849	0.963	0.654	1.418
Smoking	-0.429	0.233	3.389	0.066	0.651	0.412	1.028
Constant	4.697	2.041	5.297	0.021	109.568		

*Abbreviations: B – logistic regression coefficient; S.E. – standard error; Wals – rating scale; *P* – significance probability; OR – odds ratio

Discussion

Age, selling price of the policy, income, self-assessed health status and eating habits were significant predictors of the demand for voluntary health insurance in Croatia. That would suggest that people know the importance of quality health protection and owning this type of health insurance policy [17].

On the other hand, it turns out that an economic factor such as income may also influence the decision to buy a voluntary health insurance policy. Even though there was a statistically significant association between the policy selling price and the demand, the correlation was irrelevant in practice. Citizens with sufficient financial resources, those with a high-income level or with material wealth, had a decreasing reported demand for voluntary health insurance policies. The probable reason is that this group of citizens can cover health care costs from their own resources and therefore would buy less voluntary health insurance. The reverse was also true. When the income is lower, individuals will be less prone to risk and will buy more insurance to protect themselves from more significant financial losses in case of impaired health. Our results differ from those of a study conducted in France in 2009. They, too, concluded that income significantly affects the decision to buy a policy, but with an opposite, positive correlation. Near-poor people in France were less likely to buy voluntary health insurance policies, even when the price was heavily subsidised [18].

Additionally, we have found that individuals are becoming aware of the importance of timely healthcare at an earlier age, are more educated and have better purchasing power.

Costa and Garcia came to the same conclusion in their study in 2003, where they found that the demand for health insurance increases with the age of insurers [13].

Health impairment is also an important factor influencing the decision to buy a policy, as people with poor health are more aware of the risks to their health. Bolin et al. also found that self-assessed health status is the critical variable in the demand for voluntary health insurance, which served as a risk indicator: better health leads to lower risk [12].

In our study, the level of education did not predict demand for voluntary health insurance. This is in contrast with a study from Ireland that concluded that better-educated individuals know more and understand health information, making them capable of making better decisions about their health [19].

Given that we found that gender does not influence the purchase of a policy, it can be assumed that both men and women are equally aware of the dangers and risks related to diseases and equally decide to purchase a voluntary health insurance policy. These results are in accordance with a case study from Iran [20], but some studies found the opposite [21, 22].

We also found that marital status and the number of children did not influence the demand for voluntary health insurance, contrary to what Finn and Harmon found in their study [19]. They found that married people with children are more likely to buy a voluntary health insurance policy. This could be due to people's awareness of the importance of timely health insurance.

Physically active individuals are also not more prone to buying voluntary health insurance. These results are similar to those from Vojković [23].

Eating healthy is especially emphasised today through the individual's personal responsibility, and eating healthy is becoming an increasingly important priority for many people. We found that individuals who take care of their diet are not prone to risk and will want to ensure their health more. A study by Lee et al. discussed the importance of eating habits and their impact on people's health. They have shown a positive connection between buying health insurance more often and healthy eating habits [24].

We found a positive but practically irrelevant relationship between the price of insurance and the demand for it. The OR of 1.016 means that the odds of buying voluntary health insurance were only 1.6% higher if the policy price is increased by one unit, which, although statistically significant, may not have an actual impact on the market. Given that the standard of citizens in the Republic of Croatia is weaker compared to the rest of the EU countries, it was expected that the lower prices of policies would be a more significant "lure" for purchases [25]. However, our results suggest that the insurance price does not substantially influence its demand.

Our study has several limitations. A significant limitation was the small sample size which is not representative of the Croatian population, particularly unrepresentative to the older participants, who certainly play an essential role in this subject. Also, since we used convenience sampling, there is a problem with generalising our results to the broader population. Additionally, there is a possibility that there are other, confounding variables that affect the demand for voluntary health insurance. Healthy eating, active lifestyle, smoking

status, and willingness to buy a voluntary insurance policy could all be governed by the same internal motivation of an individual. This aspect of the demand for voluntary health insurance could be investigated more with a qualitative study design.

A positive trend in demand for a voluntary health insurance policy is highlighted because, nowadays, it is considered a necessary good, and having insurance is implied [10]. The prevailing attitude is that life and health are the most important and cannot be measured by any amount of money, and individuals are not willing to expose themselves to the risk and take care of their health.

Our study has shown that factors significantly associated with the demand for voluntary health insurance in Croatia are income, age, eating habits and self-assessed health status. Healthy eating habits had a positive correlation, and income, age, and self-assessed health status negatively correlated with the perceived demand for insurance. These results can serve as guidance for the government and policymakers when planning to improve or expand their policy coverage.

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Data sharing statement: Raw data from this study are available upon request from the corresponding author.

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ORCID

Nensi Bralić https://orcid.org/0000-0001-9509-0210

References

1. Ćurak M, Jakovčevic D, Zelenika R, Ćurković M, Fančišković I. Osiguranje i rizici. [Insurance and risks]. Zagreb: PRIF plus; 2007.
2. Christiansen T, Bech M, Lauridsen J, Nielsen P. Demographic changes and aggregate health-care expenditure in Europe [Internet]. Brussels; 2006 [cited 2022 Jul 28]. Available from: https://www.ceps.eu/ceps-publications/demographic-changes-and-aggregate-health-care-expenditure-europe/
3. Šimović H, Deskar-Škrbić M. Ekonomika javnog sektora: uloga države u tržišnom gospodarstvu. [Economics of the public sector: the role of the state in the market economy] [Internet]. Ekonomski Lab; 2018 Nov [cited 2022 Jul 28]. Available from: https://arhivanalitika.hr/blog/b2b-ekonomika-javnog-sektora-uloga-drzave-u-trzisnom-gospodarstvu/
4. Bejaković P. Sustavi socijalnog osiguranja i skrbi. [Social]. In: Ott, K, editor. Javne financije u Hrvatskoj. [Public finances in Croatia]. Zagreb: Institut za javne financije; 2007. p. 91–9.
5. Broz T, Švaljek S. Financiranje zdravstva u Hrvatskoj: od reforme do reforme. [Healthcare financing in Croatia: from reform to reform]. In: Vehovec, M, editor. O zdravstvu iz ekonomske perspektive. [Healthcare from the Economic Perspective]. Zagreb: Ekonomski institut; 2014. p. 51–75.
6. Odluka o proglašenju zakona o zdravstvenom osiguranju [Law on Health Insurance]. Narodne novine 100/2018 [Official Gazzette 100/2018] (November 5, 2018).
7. Odluka o proglašenju zakona o zdravstvenoj zaštiti [Law on Health Care]. Narodne novine 94/2001-1587 [Official Gazzette 94/2001-1587] (October 24, 2001).
8. Popović S. Odrednice stavova i zadovoljstva građana hrvatskim zdravstvenim sustavom. Medicina Fluminensis [Determinants of citizen's attitudes and satisfaction with the Croatian health care system]. Med flum. 2017;53(1):85–100. https://doi.org/10.21860/medflum2017_173385
9. Klemenčić I. Dobrovoljno zdravstveno osiguranje [Voluntary health insurance]. Porezni vjesnik. 2012;(2):120–4.
10. Puljiz M. Dobrovoljno zdravstveno osiguranje [Voluntary health insurance]. In: Vehovec, M, editor. O zdravstvu iz ekonomske perspektive. [Healthcare from the Economic Perspective]. Zagreb: Ekonomski institut; 2014. p. 109–39.
11. Phelps CE. Demand for Health Insurance: A Theoretical and Empirical Investigation. Santa Monica, CA: RAND Corporation; 1973.
12. Bolin K, Hedblom D, Lindgren A, Lindgren B. Asymmetric Information and the Demand for Voluntary Health Insurance in Europe [Internet]. NBER Work Pap Ser; 2010. Report No.: 15689. Available from: https://EconPapers.repec.org/RePEc:nbr:nberwo:15689
13. Costa J, Garcia J. Demand for private health insurance: how important is the quality gap? Health Econ. 2003;12(7):587–99. https://doi.org/10.1002/hec.756
14. Cooper R, John A. Supply and Demand in Health-Care Markets. In: Microeconomics Theory Through Applications [Internet]. Saylor Foundation; 2011. p. 688–703. Available from: https://saylordotorg.github.io/text_microeconomics-theory-through-applications/
15. Osei-Akoto I. Demand for voluntary health insurance by the poor in developing countries: Evidence from rural Ghana, Centre for Development Research (ZEF), University of Bonn. In: Institute for Development Policy and Management, University of Manchester, Manchester, UK; 2003.
16. Tržište osiguranja u Republici Hrvatskoj [Insurance market in the Republic of Croatia] [Internet]. HUO; 2017 [cited 2022 Aug 1]. Available from: https://huo.hr/upload_data/site_files/trziste_osiguranja_rh_2017-1-.pdf
17. Nestić D, Rubil I. Privatni izdaci za zdravstvo u Hrvatskoj [Private health expenditure in Croatia]. In: Vehovec, M, editor. O zdravstvu iz ekonomske perspektive. [Healthcare from the Economic Perspective]. Zagreb: Ekonomski institut; 2014. p. 79–108.
18. Grignon M, Kambia-Chopin B. Impact du revenu sur la demande d'assurance complémentaire santé [Income and the demand for complementary health insurance in France] [Internet]. Irdes. 2009 Apr;(24). Available from: https://www.irdes.fr/recherche/2009/documents-de-travail.html#DT24EN
19. Finn C, Harmon C. A dynamic model of demand for private health insurance in Ireland. The Institute for the Study of Labor. 2006; (Nov):40. [IZA] https://doi.org/10.2139/ssrn.950918

20. Ebrahimzadeh J, Arab M, Emamgholipour S. Determinants of Supplementary Health Insurance Demand: Case Study of Iran. Iran J Public Health. 2015;44(11):1563–5.

21. Nguyen H, Knowles J. Demand for voluntary health insurance in developing countries: The case of Vietnam's school-age children and adolescent student health insurance program. Soc Sci Med. 2010;71(12):2074–82. https://doi.org/10.1016/j.socscimed.2010.09.033

22. Kananurak P. Healthcare Use and Voluntary Health Insurance After Retirement in Thailand. Appl Health Econ Health Policy. 2014;12(3):299–313. https://doi.org/10.1007/s40258-014-0081-1

23. Vojković H. Ugovor o osiguranju sportaša od posljedica nesretnog slučaja. [An athlete's insurance contract in accident case]. Zb rad Prav fak Splitu. 2019;14;56(2):333–54.

24. Lee Y, Mozaffarian D, Sy S, Huang Y, Liu J, Wilde PE, et al. Cost-effectiveness of financial incentives for improving diet and health through Medicare and Medicaid: A microsimulation study. PLoS Med. 2019;16(3):e1002761. https://doi.org/10.1371/journal.pmed.1002761

25. Eurostat. Data Browser [Internet]. GDP per capita in PPS. [cited 2023 Mar 22]. Available from: https://ec.europa.eu/eurostat/databrowser/view/TEC00114/bookmark/bar?lang=en&bookmarkId=388837b6-18d3-422f-8339-fa23f0378454