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ARTICLE

Just informal patient payments are not enough, 'personal connections' and knowledge of the 'rules' are also required: a logistic regression analysis of informal practices in health care in Ukraine

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Abstract

In Ukraine, patients and their family members face numerous barriers to health care services. In response, they use coping strategies, that are manifold and complex activities aimed at overcoming these barriers, the financial burden of the treatment, and the poor quality of health care services. These activities include formal and informal practices. Based on representative survey data from 2015 ($N = 2{,}022$), we identify patterns in the use of coping strategies, specific coping strategies used to secure good quality consultation and treatment, and analyse opinions and actions towards coping practices. We further analyse the factors associated with the last experience of coping and look at patterns of connection building. We find that the chances of using both money and connection as a coping strategy are higher for people with incomplete higher and highest levels of education. The size of this effect increases with the level of education. Older people, people with better health, and people with a higher opinion of the state use informal practices less, while women are more active in developing connections. The closer the relationship is with a medical doctor, the higher is the chance that such connection will be used in case of health service consumption.

Keywords: barriers to health care; coping strategies; informal patient payments; informal practices; Ukraine

1. Introduction

Post-communist countries frequently fail to provide accessible, affordable, and quality health care services (Rechel and McKee, 2009). Among them, Ukraine did not reform its health care system for decades after the disintegration of the USSR and lacks equal access to good quality health care (Stepurko *et al.*, 2016; WHO, 2019). The country's health care system is in a state of a 'partial reform equilibrium that generates high private gains, but at a considerable social cost' (Hellman, 1998), which is a somewhat dated but still relevant description of the Ukrainian health care system. As a result, health care users in Ukraine face 'social cost' in the form of numerous barriers to use health care services and the situation has worsened with the beginning of the Russian invasion in 2014 of the Donbas area and the subsequent full-scale war in 2022.

The war is negatively affecting the humanitarian situation and access to health care, education, and social services, which have become impeded and have been destroyed, especially in the

southeastern occupied cities (Astrov *et al*., 2022). This is especially affecting people with chronic diseases who even before the war were the least protected group due to high regular treatment expenditures and loss of ability to work. The displacement of people, including of health care workers (Khorram-Manesh *et al*., 2023), has disrupted existing ties and networks, and the continuity of care of patients, who are, consequently, not able to access even basic health care services (Alessi and Yankiv, 2022). Additionally, the war increased the strain on facilities and staff. These economic constraints are exacerbated by inflation caused by the war and compounded further by widespread job losses (World Bank, 2024), patients' medical records are lost, and the availability of medications has decreased, including due to their price increase and the reduced purchasing power of patients (Khanyk *et al*., 2022). These barriers to health care have pushed patients to apply different coping strategies (Levenets *et al*., 2019).

Coping strategies, in this respect, refer to the 'multiple and complex activities of the patients and their family members to cope with the barriers in access to health care services, the financial burden of the treatment and the poor attributes of the health care services' (Levenets *et al*., 2019). Coping strategies include both formal (e.g. selling goods, fundraising) (Gotsadze *et al*., 2009) and informal (e.g. informal payments and/or personal connections) practices (Stepurko *et al*., 2015). They involve the use of available social and financial resources to reach the desired outcome and are shaped by established official health care system delivery routes. For example, when official means to improve the quality of consultations (like paying officially for a consultation by a highly rated physician) are lacking, patients might refer to informal payments or personal connections to obtain necessary care. Likewise, while visiting a medical doctor, patients might decide to express their gratitude in the form of payments or gifts. Using these strategies, patients try to ensure a good relationship with the medical doctor during future consultations.

The shortcomings of the health care system and the lack of funding provide a fertile ground for informal practices. The perception of informal practices is somewhat conflicting, since on the one hand these practices increase inequality in access and delivery of health care, but on the other, they are self-sustaining and perceived by patients as helpful and needed to obtain necessary care, or to 'get things done' (Ledeneva, 2018; Levenets *et al*., 2019). Consequently, these practices are perpetuated and are widespread in post-communist countries (Ensor, 2004; Rechel and McKee, 2009; Ledeneva, 2018), where there is a need to navigate a 'chaotic' health care system, even though they are unethical, often illegal, and exacerbate inequalities in access to health care (Baji *et al*., 2013). To address these informal practices, a better understanding of the patterns of informal coping strategies, specifically informal payments and the use of personal connections, is essential.

Previous studies of health care services in Ukraine have either qualitatively described coping strategies like informal payments, personal connections, and other 'safe kit' measures (Bazylevych, 2009; Polese, 2014; Levenets *et al*., 2019) or quantitatively assessed informal payments for health care services, pharmaceuticals, and health care goods (Stepurko *et al*., 2017*a*; Stepurko *et al*., 2017*b*). An in-depth quantitative assessment of the wide variety of informal practices to obtain access and good quality health care is, however, lacking. In this paper, we identify the patterns (perception and determinants) of informal practices (as coping strategies) applied by patients in the health care sector in Ukraine. We use nationally representative data and statistical analysis to address this issue.

2. Methods

The Kyiv International Institute of Sociology (KIIS) provided the data for this study from the Omnibus survey. Omnibus is a regular nationwide representative multi-targeted survey of the adult population in Ukraine that includes questionnaires designed by various stakeholders. The research instrument (the questionnaire) for this study on informal practices was developed by the research team (three of the authors of this paper) and then included in the Omnibus'

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questionnaire. The survey was conducted by KIIS in December 2015. This period was a significant transitional phase in the Ukrainian health care system, which thus provided an unique opportunity to capture informal practices before the start of the health care reforms. Although the data are from 2015, the patterns of informal patient payments and the reliance on personal connections and knowledge of the 'rules' remain highly relevant today because little has changed in the underlying socio-economic and cultural factors influencing these practices.

For the survey, a nationally representative multi-staged stratified random sample was drawn by the KIIS. The sample was intended to be representative of the adult population (the age of 18+) that resided in Ukraine, namely those who were not in military service, not in prison or hospitals. Details about the sampling can be found in Appendix 1. In total, 2,022 respondents who lived in 110 cities, towns, or villages were interviewed. The interviews were conducted face-to-face by trained interviewers who used a questionnaire with closed-ended questions. For the purpose of this study, we asked the respondents – household members – about the use and perceptions of personal connections and informal payments, about their socio-demographic situation, and their trust in the state. The questions used in this study can be found in Appendix 2.

We apply regression analysis to identify patterns in the use of coping strategies and specific coping strategies used to secure good consultation and treatment. We also analyse opinions and actions towards coping practices. The six dependent variables presented below are included in our regression analyses.

The first two variables include:

(a) A categorical variable indicating which coping strategies were used during the last consultation or treatment. The answering categories are: using only money, using only connections, using both money and connections, and using neither money nor connections (reference category).
(b) A categorical variable of coping strategies that are used specifically to secure a better than sub-standard quality of consultation, with the following answering categories: using only connections, using only money, using both money and connections, difficult to say, and not using money or connections (reference category).

The following three variables are rated by respondents on a 5-point Likert scale ranging from 'Strongly disagree' to 'Strongly agree' ('Difficult to say' is the middle value):

(c) The statement that both money and connections are important for health care.
(d) The statement that connections are more important than money for health care.
(e) The statement about connections building as asking contacts of service providers from others.

The sixth variable is:

(f) About actions to build connections by paying the medical doctor to establish good relations and has three values: 'No', 'Difficult to say', and 'Yes'.

There are three groups of explanatory variables in our study (Appendix 3). The selection of these variables is based on findings from previous studies where they were found to be correlated with the choice and use of coping strategies. The first group includes socio-demographic variables, namely gender, age, education, income, settlement type, nationality, regions, and microregions of residence (for details on these microregions, see Appendix 4). Studies conducted in Poland show that age and male gender increase the likelihood of making informal payments (Lewis *et al.*, 2000). People with a higher level of education are more likely to pay informally in Serbia and Russia (Gordeev *et al.*, 2014; Arsenijevic *et al.*, 2015). Low-income individuals

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pay a higher share of their income for health care-related expenditures, including informal payments in Albania (Hotchkiss *et al*., 2005), Ukraine, and Kazakhstan (Sari *et al*., 2000). The proportion of people paying informally is higher in rural areas in comparison to urban areas in Albania (Hotchkiss *et al*., 2005). In a study on informal payments for maternity services in Greece, nationality also is a factor that influences paying informally (Kaitelidou *et al*., 2013).

The second group of explanatory variables includes health status and medical education. Previous studies suggest that health status has a negative association with the likelihood of paying informally (Gordeev *et al*., 2014). The presence of a family member with a medical education increases the family's permeability into the health care system and helps to navigate it. Even though we did not find studies that explored the connection between having a family member with medical education and the choice and use of coping strategies, we explore this perspective as one that potentially influences this connection.

The third group of explanatory variables includes the attitude towards the state, which is an index variable created out of four variables that explore various aspects of the attitude towards the state (see Appendix 3). A study in Georgia shows that with the increase in institutional trust, the use of informal practices declines (Aliyev, 2014).

We estimate two multinomial regressions and four binary logit regressions using the software package Stata 15. The first multinomial analysis is on the last experience of coping strategies, and the second is on the specific coping strategies used to secure good consultation and treatment in general. In both regressions, we control for socio-demographic characteristics, respondent's health status, medical education, and opinion on the state. For the multinomial logistic regression, variables on health status, income, nationality, and macroregions are regrouped to ensure that each cell has a sufficient amount of observations (see Appendix 4). The categorical variable indicating what coping strategies were used last time for a consultation or treatment is considered as a proxy for the most common coping strategy, which is confirmed by crosstabs analysis of the two continuous dependent variables.

Four logistic regressions analyse opinions and actions towards coping practices: the opinion that both money and connections are important, the opinion that connections are more important than money, on connection building by asking contacts of service providers from others, and on connection building by paying the medical doctor to establish good relations.

3. Results

Altogether, 2,022 persons participated in the survey. Table 1 presents descriptive statistics of the dependent variables. Descriptives on the independent variables are presented in Appendix 4. The descriptive statistics show that 39% of respondents are male and 61% are female. This skewed gender distribution reflects the gender distribution in Ukraine society where the male-to-female ratio in Ukraine is approximately 86.33 males per 100 females for all age groups. The average age of our respondents is 50 years and 30% of them have the highest possible degree of education. In total, 54% consider that they have enough money to buy food but find it hard to buy clothes, and 27% state that they have enough money even to save. In total, 32% of our respondents live in a village and 41% in a big city or a very big city. In total, 88% of respondents identify themselves as Ukrainian while 7% as Russians. In total, 60% of respondents do not have medical doctors in their network, while 36% are either medical doctors or have friends who are medical doctors.

The data in Table 1 show that the number of people who used one coping strategy (only money or only connections) is rather small (4 and 3%, respectively). Most respondents, 51%, used both coping strategies. At the same time, 41% did not use any of these coping strategies. Data on actions towards connection building show that 62% of respondents obtained contacts on the health service provider from others, and 49% paid the medical doctor to establish good relations. At the same time, 43% of respondents agree that connections are more important than money. Respondents express various opinions on the coping strategies to improve the quality of the consultation: 25% state that both connections and money are needed to improve the

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Table 1. Descriptive statistics of dependent variables included in analysis

Variable	Obs.	Mean	Std. dev.	Min	Max
Used money or connections					
1 Neither money nor connections	2,022	0.41	0.49	0	1
2 Only money	2,022	0.04	0.20	0	1
3 Only cons	2,022	0.03	0.18	0	1
4 Used money and connections	2,022	0.51	0.50	0	1
Ask contacts of service provider from others					
1 Strongly disagree	2,021	0.08	0.27	0	1
2 Disagree	2,021	0.20	0.40	0	1
3 Difficult to say	2,021	0.11	0.31	0	1
4 Agree	2,021	0.50	0.50	0	1
5 Strongly agree	2,021	0.12	0.32	0	1
Pay to medical doctor to establish good relations and attitude					
1 No	2,020	0.43	0.50	0	1
2 Difficult to say	2,020	0.08	0.27	0	1
3 Yes	2,020	0.49	0.50	0	1
Improving the quality of consultation					
1 I can get a good consultation and treatment only via involving connections	2,008	0.11	0.32	0	1
2 I can get a good consultation and treatment only via involving money	2,008	0.23	0.42	0	1
3 Both connections and cash payment	2,008	0.25	0.43	0	1
4 I can get a good consultation and treatment without any gift	2,008	0.17	0.37	0	1
5 Difficult to say	2,008	0.24	0.43	0	1
Connections are more important than money					
1 Strongly disagree	2,021	0.04	0.19	0	1
2 Disagree	2,021	0.36	0.48	0	1
3 Difficult to say	2,021	0.17	0.38	0	1
4 Agree	2,021	0.32	0.47	0	1
5 Strongly agree	2,021	0.11	0.31	0	1
Both money and connections are important					
1 Strongly disagree	2,019	0.05	0.21	0	1
2 Disagree	2,019	0.17	0.37	0	1
3 Difficult to say	2,019	0.13	0.34	0	1
4 Agree	2,019	0.49	0.50	0	1
5 Strongly agree	2,019	0.17	0.38	0	1

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quality of consultation, while 23% state that only money is needed and 11% – only connections. Additionally, 17% of respondents state that they can get a good consultation and treatment without any gift, and 24% are not sure about their strategy.

Crosstab analysis (Appendix 2) was done to identify interdependencies between the six dependent variables and to identify possible inconsistencies in responses.

Despite reporting 'not using money nor connection' during the last health care use, a substantial share of respondents (43.3%) still agreed that they asked contacts of service providers in general. Among those who used only money as the coping strategy last time, 27.3% disagreed and 58% agreed with the statement that they ask for contacts of service providers from others.

Only 4.6% of the respondents who used both money and connections last time are not sure about paying a medical doctor to establish good relations and attitude in general. An equal share of respondents who used connections recently reported paying and not paying medical doctors (41.5% in each category) to establish good relations in general. Twice as many respondents who used money as a common coping strategy last time answered positively about paying for a better attitude (65.9%) in comparison to (27.3%) who assumably paid for other reasons.

Less than half (46.6%) of those who used only money last time and 40.7% of respondents who used both money and connections consistently use these strategies to improve the quality of consultation. However, only 20.3% of those who used only connections last time reported using them to improve the quality of consultation in general. They also reported using only money for that reason (20.3%) and using both money and connections (28.1%). In total, 29.5% of respondents who did not use any coping strategy recently agree with the statement that they can get good health care without deploying any coping mechanism, and 26.5% of those who did not use it state that using money is a way to improve quality of consultation.

In total, 41.5% of those who used connections last time and 61.4% of those who used only money do not state that connections are more important than money in general. Only 36.9% of those who used connections last time and 54.4% of those who used both strategies recently agree that connections are more important than money.

Less than half (45%) of the respondents who did not use any coping strategy last time agree about the importance of both money and connections, while for users of either money or connections, this is 55.3 and 55.4%, respectively. Logically, only 11.1% of patients who used both strategies disagreed with the importance of both strategies in general, in contrast to 82.1% who agreed. Table 2 presents the odds ratios of the multinomial regressions on coping strategies. The dependent variable has four levels: use nothing (base category), only money, only connections, and a combination of both.

3.1 Using both money and connection

Results suggest that the chances of using both money and connection as a coping strategy are higher for people with the highest and incomplete higher levels of education and that the size of this effect increases with the level of education. Using both money and connections is also common for people with Ukrainian nationality, residents of Western, Eastern, and Southern regions in Ukraine, and for people who have in their network medical doctors as friends. Residents of small towns and very big cities have lower odds of using both money and connections in comparison to village residents. However, this effect is ambiguous. Three categories of respondents have lower chances of using both money and connections: people who have good health; people who are not sure whether they have friends with medical education; and people who have a more positive attitude towards the state.

3.2 Using only money

Results show a weak negative association between respondent's income and the probability of using only money as a coping strategy. People who do not have enough money even for food

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Table 2. Coping strategies: results of multinomial logistic regression analysis

	Reference category: did not use money or connections		
	Used only money	Used only connections	Used both money and connections
Gender: male			
Gender: female	0.950	1.182	1.133
	(0.226)	(0.345)	(0.119)
Age: 18–92			
	0.982**	0.978**	0.989***
	(0.00872)	(0.0109)	(0.00384)
Education: incomplete secondary			
Education: specialised and specialised secondary	1.138	0.872	1.327
	(0.580)	(0.680)	(0.300)
Education: incomplete higher	0.628	2.711	1.823*
	(0.728)	(2.503)	(0.662)
Education: full higher and some doctorate	1.614	2.161	2.205***
	(0.896)	(1.719)	(0.543)
Income: not enough money even for food			
Income: enough for food but hard to buy clothes	0.612	0.769	0.994
	(0.196)	(0.338)	(0.148)
Income: enough to buy food, clothes and even save	0.477*	0.894	1.231
	(0.197)	(0.445)	(0.226)
Income: we can buy some expensive things and everything that we want	0.233	0.231	0.830
	(0.256)	(0.265)	(0.293)
Settlement: village			
Settlement: small town up to 20 thousand	0.817	0.696	0.501***
	(0.284)	(0.350)	(0.0878)
Settlement: town 20–99 thnd	1.064	0.838	1.152
	(0.463)	(0.451)	(0.198)
Settlement: big city 100–499 thnd	0.628	1.480	0.966
	(0.217)	(0.571)	(0.138)
Settlement: very big city more than 500 thnd	0.793	0.688	0.716**
	(0.295)	(0.333)	(0.116)
Nationality: other nation			
Nationality: Ukrainian	0.969	4.487	1.479*
	(0.616)	(4.685)	(0.345)

(*Continued*)

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Table 2. (*Continued.*)

	Reference category: did not use money or connections		
	Used only money	Used only connections	Used both money and connections
Nationality: Russian	0.491	9.388**	1.211
	(0.467)	(10.48)	(0.355)
Macroregions: Central			
Macroregions: Western	0.781	2.663**	2.095***
	(0.265)	(1.289)	(0.352)
Macroregions: Eastern	0.203***	1.368	1.899***
	(0.0853)	(0.671)	(0.301)
Macroregions: Southern	0.681	3.546**	1.805***
	(0.277)	(1.899)	(0.367)
Macroregions: Northern	0.721	1.695	1.302
	(0.270)	(0.969)	(0.252)
Health status: very bad health			
Health status: average health	1.352	0.692	0.919
	(0.462)	(0.356)	(0.134)
Health status: good health	0.943	1.407	0.644**
	(0.404)	(0.753)	(0.116)
Medical education/connections: No medical doctors in my connections			
Medical connection/education: Difficult to say	0.277*	1.377	0.639*
	(0.205)	(0.897)	(0.154)
Medical connection/education: friends are medical doctors	0.665	4.490***	2.434***
	(0.241)	(1.470)	(0.318)
Medical connection/education: family members are doctors	0.400	2.022	1.236
	(0.248)	(1.104)	(0.237)
Medical connection/education: I am a medical doctor	0.664	5.341***	1.469
	(0.503)	(3.029)	(0.401)
Attitude towards state: 4–19			
	0.929*	0.978	0.952***
	(0.0359)	(0.0443)	(0.0156)
Obs.	1,961	1,961	1,961

Note: Results are odds ratios. Standard errors in parentheses.
***$P \leqslant 0.01$, **$P \leqslant 0.05$, *$P \leqslant 0.1$.

(reference income category) have a 110% higher likelihood to use only money than people who have just enough money to buy everything and save (third category of the income scale used in the regression). However, the effect is statistically significant only at the 10% level and can be seen

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as inconclusive since it disappears for people with lower or higher income. Also, residents of Eastern Ukraine, those who are not sure whether they have friends with medical education, and people whose attitude towards the state is more positive have lower odds of using only money. A one standard deviation decrease in the index of the attitude towards the state is associated with (3.11 × 7.6%) 24% higher odds of using only money as a coping strategy.

3.3 Using only connections

The odds that people will use only connections as a coping mechanism are higher for those who have friends as medical doctors and for those who are physicians themselves. Also, this strategy is more common for residents of Western and Southern regions and people of Russian nationality.

Additionally, we found that the probability of using any of the given coping strategies decreases with age. At the same time, the effect of gender is not statistically significant in all cases.

Table 3 presents the results of four separate logit regression models. We look into the predictors of two different coping strategies (asking contacts of service providers from others and paying the medical doctor to establish good relations) and of two opinions about coping strategies (connections are more important than money and both money and connections are important).

3.4 Ask contacts of service provider from others

People who have medical doctors as friends, as family members, or are medical doctors themselves have 80–138% higher odds of asking the contacts of the service provider from others in contrast to people without physicians in their network. Our results indicate that older people, residents of a small town, people with very good health, and people with a higher opinion on the state have lower chances of asking for the contacts of service providers from others. Additionally, these chances are greater for women, people with full higher education, residents of a big city, residents of Southern Ukraine and people of other nationalities.

3.5 Pay to the medical doctor to establish good relations and attitude

The results indicate that the chances of paying medical doctors to establish connections are higher for women, people with all levels of education, residents of Western Ukraine, and people who have physicians as friends. We find that people who have enough money to buy food but cannot afford clothes and people who are not sure about their financial status have lower odds of paying medical doctors to establish connections. However, the effect is ambiguous because it only holds up until a certain income level and then disappears. Our results on the settlement are inconclusive since both the odds ratio of people in a small town and people in a big city pay to establish connections are smaller. People with perfect, very good, and good health as well as people who are not sure about the presence of medical doctors in their network, also have lower odds of paying medical doctors to establish connections. People with a higher opinion on the state have a lower probability of paying to establish a connection.

3.6 Connections are more important than money

We observe that odds ratios are higher for people from all income levels compared to those who do not have enough money for food (except those who are not sure about their income), to state that connections are more important than money. Moreover, the odds ratio of having that opinion increases with income: 30% for people with the lowest income level in contrast to 131% for the highest. However, the statistical significance varies by income level. Residents of medium-sized towns, residents of Eastern Ukraine as well as people who have medical doctors as friends have higher odds to state that connections are more important than money. At the same time,

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Table 3. Use and perception of coping strategies and socio-demographical characteristics: results of logistic regressions

	Ask contacts of service provider from others	Pay to medical doctor to establish good relations and attitude	Connections are more important than money	Both money and connections are important
	1 'Strongly disagree' 2 'Disagree' 3 'Difficult to say' 4 'Agree' 5 'Strongly agree'	1 'No' 2 'Don't know' 3 'Yes'	1 'Strongly disagree' 2 'Disagree' 3 'Difficult to say' 4 'Agree' 5 'Strongly agree'	1 'Strongly disagree' 2 'Disagree' 3 'Difficult to say' 4 'Agree' 5 'Strongly agree'
Gender: male				
Gender: female	1.329***	1.203**	1.122	0.984
	(0.118)	(0.113)	(0.098)	(0.088)
Age: 18–92				
	0.989***	0.994	0.999	0.994*
	(0.003)	(0.003)	(0.003)	(0.003)
Education: incomplete secondary				
Education: specialised and specialised secondary	1.241	1.849***	0.855	1.133
	(0.238)	(0.391)	(0.166)	(0.218)
Education: incomplete higher	1.262	2.473***	0.689	0.891
	(0.385)	(0.801)	(0.208)	(0.261)
Education: full higher and some doctorate	1.548**	2.702***	0.879	1.134
	(0.324)	(0.618)	(0.184)	(0.236)
Income: not enough money even for food				
Income: enough for food but hard to buy clothes	0.876	0.789*	1.303**	1.021
	(0.113)	(0.107)	(0.164)	(0.131)
Income: difficult to say	1.232	0.557*	1.040	0.612
	(0.415)	(0.195)	(0.339)	(0.196)

(*Continued*)

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Table 3. (*Continued.*)

	Ask contacts of service provider from others	Pay to medical doctor to establish good relations and attitude	Connections are more important than money	Both money and connections are important
Income: enough to buy food, clothes and even save	1.195	1.158	1.461**	1.356*
	(0.190)	(0.192)	(0.225)	(0.214)
Income: we can buy some expensive things and everything that we want	1.249	0.972	2.316***	1.167
	(0.392)	(0.322)	(0.717)	(0.370)
Settlement: village				
Settlement: small town up to 20 thousand	0.763*	0.561***	1.094	0.991
	(0.111)	(0.088)	(0.154)	(0.145)
Settlement: medium town 20–99 thnd	1.193	1.084	1.374**	1.572***
	(0.178)	(0.166)	(0.195)	(0.225)
Settlement: big city 100–499 thnd	1.387***	0.773**	1.200	0.993
	(0.169)	(0.101)	(0.144)	(0.122)
Settlement: very big city more than 500 thnd	0.815	1.062	0.848	1.139
	(0.131)	(0.178)	(0.133)	(0.181)
Nationality: Ukrainian				
Nationality: Russian	0.882	0.925	1.009	1.135
	(0.155)	(0.170)	(0.180)	(0.202)
Nationality: Russian and Ukrainian	1.474	0.942	0.928	0.865
	(0.375)	(0.249)	(0.215)	(0.200)
Nationality: other nation	1.853*	1.087	1.250	1.117
	(0.675)	(0.396)	(0.425)	(0.380)

Macroregions: Kyiv				
Macroregions: Western	1.347	1.878**	1.128	2.145***
	(0.323)	(0.478)	(0.263)	(0.507)
Macroregions: Eastern	1.087	1.338	1.439*	1.258
	(0.240)	(0.314)	(0.312)	(0.271)
Macroregions: Central	0.695	0.976	0.711	1.161
	(0.173)	(0.260)	(0.173)	(0.285)
Macroregions: Southern	2.134***	1.469	0.547**	0.552**
	(0.542)	(0.391)	(0.138)	(0.139)
Macroregions: Northern	0.774	0.835	0.729	0.485***
	(0.194)	(0.224)	(0.181)	(0.120)
Health status: very bad health				
Health status: bad health	1.001	0.948	1.481	0.862
	(0.269)	(0.278)	(0.415)	(0.244)
Health status: fair health	0.911	0.848	1.424	0.844
	(0.243)	(0.246)	(0.396)	(0.238)
Health status: difficult to say	0.615	0.553	1.297	0.566
	(0.305)	(0.284)	(0.636)	(0.273)
Health status: good health	0.802	0.589*	1.172	0.635
	(0.227)	(0.181)	(0.344)	(0.189)
Health status: very good health	0.505*	0.522*	1.149	0.634
	(0.179)	(0.197)	(0.404)	(0.228)
Health status: perfect health	1.055	0.467*	1.312	0.642
	(0.450)	(0.205)	(0.541)	(0.272)

(*Continued*)

Table 3. (*Continued.*)

	Ask contacts of service provider from others	Pay to medical doctor to establish good relations and attitude	Connections are more important than money	Both money and connections are important
Medical education/connections: No medical doctors in my connections				
Medical connection or education: Difficult to say	1.380	0.672*	0.730	0.657**
	(0.271)	(0.142)	(0.142)	(0.128)
Medical connection or education: friends are medical doctors	1.832***	1.750***	1.316***	1.068
	(0.196)	(0.197)	(0.133)	(0.110)
Medical connection or education: family members are medical doctors	1.800***	0.975	0.872	1.125
	(0.308)	(0.172)	(0.143)	(0.192)
Medical connection or education: I am a medical doctor	2.379***	1.279	1.214	1.440
	(0.558)	(0.303)	(0.268)	(0.331)
Attitude towards state: 4–19				
	0.971**	0.961***	0.950***	0.959***
	(0.014)	(0.014)	(0.013)	(0.013)
Obs.	2,015	2,014	2,015	2,013

Note: Results are odds ratios. Standard errors in parentheses.
***$P \leq 0.01$, **$P \leq 0.05$, *$P \leq 0.1$.

respondents from Southern Ukraine and people with a higher attitude towards the state have lower chances of stating that connections are more important than money.

3.7 Both money and connections are important

People who have enough income to buy food, clothes, and even save, residents of medium-sized towns and residents of Western Ukraine have a higher probability of stating that both money and connections are important. At the same time, respondents from Southern and Northern Ukraine and people who are not sure about the presence of medical doctors in their network and people with a higher opinion on the state have lower odds of stating that both money and connections are important.

Table 4 presents the odds ratios of the multinomial regressions on respondents' experience regarding actions aimed at securing a good health care consultation. The dependent variable has four levels: can obtain a good consultation without using any strategy (base category), using only money, only connections, and a combination of both.

3.8 I can get a good consultation and treatment only via connections

We find that people with incomplete higher education, residents of all regions (in contrast to the Central region), people who have medical doctors as friends, and people who are medical doctors themselves have a higher probability to state that it is possible to get a good consultation and treatment using only connections.

3.9 I can get a good consultation and treatment only via payment

Results indicate that Ukrainians, residents of Eastern and Southern regions, and people who have physicians as friends are more likely to state that money is the best instrument to ensure a good consultation. At the same time, people with good health and people who are medical doctors themselves have a lower probability of agreeing with this than people who have no medical connections.

3.10 Both connections and payment

Ukrainians by nationality, people who have medical doctors as friends, and people who have family members as medical doctors have a higher chance of stating that they need to use both money and connections to secure a good consultation. The same is true of respondents with lower income and village residents. At the same time, people with good health and people whose attitude towards the state is more positive have a lower probability of stating that both money and connections are instrumental in achieving the desired outcome. Results indicate that the chances that a person states that both connections and money are important reduce with age. The effect is moderate. Respondents who are 10 years younger have 15% higher odds of using both money and connections.

4. Discussion

We have analysed the use and determinants of informal practices as coping strategies applied by patients in the health care sector. Our findings show that women are more active in developing connections, while older people, people with better health, and people with a higher opinion of the state use informal practices less. The closer the connection to the medical doctor (e.g. such person is a family member or close friend), the higher is the chance that such connection will be relied upon in case of health service consumption.

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Table 4. Improving the quality of consultation: results of multinomial logistic regression analysis

	Reference category: I can get a good consultation and treatment without any gift			
	I can get a good consultation and treatment only via connections	I can get a good consultation and treatment only via payment	Both connections and payment	Difficult to say
Gender: male				
Gender: female	1.219	1.106	0.911	0.982
	(0.238)	(0.173)	(0.142)	(0.152)
Age: 18–92				
	0.985**	0.997	0.985**	0.999
	(0.00707)	(0.00572)	(0.00570)	(0.00570)
Education: incomplete secondary				
Education: specialised and specialised secondary	1.850	1.161	1.108	1.101
	(1.073)	(0.378)	(0.374)	(0.350)
Education: incomplete higher	6.740***	1.245	1.748	1.294
	(4.949)	(0.717)	(0.984)	(0.747)
Education: full higher and some doctorate	2.926*	0.983	1.548	1.162
	(1.757)	(0.352)	(0.564)	(0.406)
Income: not enough money even for food				
Income: enough for food but hard to buy clothes	1.134	1.294	0.514***	0.721
	(0.347)	(0.301)	(0.115)	(0.159)
Income: enough to buy food, clothes and even save	1.430	1.241	0.815	0.666
	(0.510)	(0.358)	(0.221)	(0.185)

Income: we can buy some expensive things and everything that we want	1.411	0.657	0.275**	0.533
	(0.799)	(0.382)	(0.149)	(0.269)
Settlement: village				
Settlement: small town up to 20 thousand	0.889	1.039	0.448***	1.016
	(0.293)	(0.272)	(0.122)	(0.252)
Settlement: town 20–99 thnd	1.399	1.460	0.906	0.765
	(0.443)	(0.390)	(0.239)	(0.212)
Settlement: big city 100–499 thnd	0.720	0.838	0.460***	0.548***
	(0.193)	(0.178)	(0.0962)	(0.115)
Settlement: very big city more than 500 thnd	0.973	1.010	0.532***	0.773
	(0.298)	(0.246)	(0.130)	(0.185)
Nationality: other nations				
Nationality: Ukrainian	1.339	2.366**	2.001**	1.219
	(0.492)	(0.853)	(0.698)	(0.402)
Nationality: Russian	0.477	1.980	1.188	1.194
	(0.260)	(0.853)	(0.530)	(0.486)
Macroregions: Central				
Macroregions: Western	2.273**	1.122	1.443	0.630*
	(0.768)	(0.283)	(0.352)	(0.152)
Macroregions: Eastern	2.831***	1.587*	1.198	0.758
	(0.913)	(0.376)	(0.287)	(0.173)
Macroregions: Southern	2.950***	1.625*	1.606	0.540**
	(1.174)	(0.480)	(0.478)	(0.164)
Macroregions: Northern	2.208**	0.902	0.766	0.739
	(0.830)	(0.262)	(0.223)	(0.197)

(*Continued*)

Table 4. (*Continued.*)

	Reference category: I can get a good consultation and treatment without any gift			
	I can get a good consultation and treatment only via connections	I can get a good consultation and treatment only via payment	Both connections and payment	Difficult to say
Health status: very bad health				
Health status: average health	1.240	1.013	0.999	0.950
	(0.373)	(0.224)	(0.225)	(0.206)
Health status: good health	0.577	0.603*	0.552**	0.701
	(0.205)	(0.161)	(0.148)	(0.183)
Medical education/connections: no medical doctors in my connections				
Medical connection/education: difficult to say	1.303	3.049***	0.984	2.076*
	(0.742)	(1.109)	(0.439)	(0.778)
Medical connection/education: friends are medical doctors	4.463***	1.568**	2.726***	1.503**
	(1.022)	(0.321)	(0.538)	(0.310)
Medical connection/education: family members are medical doctors	1.601	0.791	1.964**	1.523
	(0.585)	(0.260)	(0.562)	(0.445)
Medical connection/education: I am a medical doctor	5.617***	0.415*	0.910	1.197
	(2.240)	(0.217)	(0.410)	(0.491)
Attitude towards state: 4–19				
	1.003	1.006	0.956*	0.963
	(0.0296)	(0.0240)	(0.0233)	(0.0232)
Obs.	1,948	1,948	1,948	1,948

Note: Results are odds ratios. Standard errors in parentheses.
***$P \leq 0.01$, **$P \leq 0.05$, *$P \leq 0.1$.

Overall, the rationale behind the choice and usage of informal practices as coping strategies depends on factors like medical diagnosis, prognosis, financial situation, cost of treatment, government protection, and the psychological state of the patient (Mahmood and Ali, 2002; Gotsadze *et al*., 2005; Cieślak *et al*., 2013). However, these factors were not the aim of our study and were not investigated, which is one of the limitations of our study. Another limitation is not gathering data and not estimating how many people were not able to cope at all and had to forego treatment due to various reasons, including the high cost of treatment or poor prognosis.

The war has not only destroyed some of the health care infrastructure and created an array of new barriers to the use of health care, but has also conditioned patients and medical personnel to develop new coping strategies. To the best of our knowledge there have been no studies on how the war has affected coping strategies of cancer patients, but it is safe to assume that previously used approaches to coping strategies most likely have influenced decision-making during the war: entrepreneurial patients use opportunities to actively cope while more passive patients go with the flow. As an example, we see that some patients have migrated abroad where they receive medical assistance and better treatment (Biesiada *et al*., 2023).

We find that among the socio-economic characteristics, age and gender influence the use of coping strategies. People of older age use connections or payments less, possibly, because their expectations are shaped by the experience of 'free health care for all' during the Soviet times. We found that women are much more active in developing connections by paying and asking for contacts from health professionals. This could be explained by three facts. First, education, health care, and social services are the most feminised professions in Ukraine (Libanova *et al*., 2012). Therefore, women are more likely to have the required social capital for connections. Second, women in Ukraine, especially those of lower socio-economic status, have poorer (self-assessed) health than men (Cockerham *et al*., 2017b), thus they interact with health care providers more often and these experiences shape coping strategies. Third, women are more likely to be responsible for the care of children and housekeeping matters, and children are also more likely to need health care (Hinote *et al*., 2009; Libanova *et al*., 2012). Also, the social skills of women might be higher. Surprisingly, we find no association between the level of income and the use of coping strategies. This finding requires further investigation. However, one might speculate that due to the underdeveloped private health care sector, people with high income face the same barriers as people with low income, which is shown in a study by Cockerham that concludes: 'The expense of care seems to affect rural and urban dwellers alike as residence is not significant, nor is nationality and even SES' (Cockerham *et al*., 2017a).

A person in good health is less likely to face barriers to health care (Cockerham *et al*., 2017a), and, thus, to have extensive experience in using coping strategies even in a health care system with multiple barriers. Our results show that indeed this is the case. Respondents with better health are less likely to use money, as well as both money and connections, compared to respondents in poor health. Interestingly, health status predicts neither the use of connections as a coping strategy nor a hypothetical preference for money and connections. Since we see no difference in the attitude and the usage of connections between people with different health statuses, we can assume that people with health issues know the importance of connections, and we can conclude that even people with limited experience in navigating the health care system still understand that connections are important.

We find that the closer the 'distance to a doctor' is, the more probable the use of connections becomes. Specifically, people who have friends as medical doctors appear to be approximately three times more likely to use connections in comparison to money in contrast to those who have no medical connections. However, for people who are medical doctors, this is more nuanced – they have 5.6 times higher odds to use connections to improve the quality of consultation in comparison to a 0.4 chance to use money among those who have no medical connections. Naturally, the sole presence of medical connections is a conducive circumstance to their usage, and the influence of social relations has been described by as well: 'In the majority of cases where close social relations

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are involved, monetary compensation is absent; 83 percent of blat between relatives and friends was non-monetized' (Onoshchenko and Williams, 2013). Even though in our study, social relations between medical doctors lie beyond the family-friends circle, we may assume that some kind of norm of not paying/taking money for acquaintances-doctors plays a role here. Additionally, this could be seen as a sign of solidarity or interdependency between medical doctors who work for low official pay to save financial resources for each other, hoping to pay back with their own health care service sometime. Moreover, since informal practices are widely stigmatised (Stepurko *et al.*, 2017*b*) and can be seen by some medical doctors as breaching professional ethics (Gaal and McKee, 2004), medical doctors on both sides of medical consultation might want to highlight their separation from this phenomenon by not giving and/or taking informal payments to/from colleagues. Further research is needed to explore to what extent other medical professionals (like nurses) are involved in facilitating access to health care services and what coping strategies would be chosen if the nurse is a 'gateway' to health care system.

We found that people with a higher opinion of the state have more negative perceptions and are less likely to use any coping strategies. This finding is consistent with other studies of informal practices in particular, which find that people who trust institutions are 'less likely (0.571) to be involved in informal practice than those who mistrust them' (Cvetičanin *et al.*, 2019). Since we controlled for socio-economic factors, our finding requires further exploration. However, we can conclude that a positive relationship exists between health care systems' functioning and good governance of the state. Since trust in institutions is a predictor of participation in informal practices (Cvetičanin *et al.*, 2019), we can assume that these people are more satisfied with the current state and the health care system and are therefore less likely to use coping strategies.

The chances of using both money and connection as a coping strategy are higher for people with incomplete higher and highest levels of education, and the size of this effect increases with the level of education. Since we control for the level of income, this effect should not be connected to the higher earning power of the higher educated. Instead, we suggest that the system of higher education is not fully reformed and still resembles the Soviet system (and similar to the health care system in terms of the prevalence of informal practices). Therefore, highly educated people get more exposure and experience in informal practices during their education. Consequently, higher educated people may be better informed and more aware that they need to pay or have connections to obtain good quality health care. Other studies explain the higher use of informal practices by higher educated people with the fact that the latter possess a sufficient amount of financial and social capital (Cvetičanin *et al.*, 2019). Therefore, we assume that higher educated people have more experience in using coping strategies (both money and connections) and can transfer this experience between different contexts (health care and education systems). This is even more so in the case of medical students since they are embedded in the health care system. More research is needed to see whether medical students in comparison to students of other specialties are more likely to use informal practices and what informal practices are preferred when it comes to using health care services.

With the increased demand for health care services, like during the COVID-19 pandemic and the current war in Ukraine, securing access to health care becomes more difficult (Quinn *et al.*, 2022). This may make corruption more acceptable, and medical personnel might refer to it more often, given the decrease in income. Low patients' trust in authorities, low transparency of how the pandemic is handled, poor access and quality of public health care services, and higher pandemic mortality rate appear to have exacerbated the usage of informal payments in neighbouring Eastern European countries (Horodnic, 2021). All these conditions hold for the Ukrainian health care system and are exacerbated by the war. More evidence is needed on the degree to which access to health care services was impeded for cancer patients and what coping strategies were used during such an unprecedented event as the war in Ukraine.

While the data for this study were collected in 2015, the findings remain pertinent to contemporary discussions on informal practices in health care. The continuity of informal payment practices and the enduring importance of personal connections and knowledge of the system are well-

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documented in more recent literature. Therefore, the insights from this study provide a foundational understanding that can inform current and future policy interventions aimed at curbing informal practices and enhancing the transparency and equity of the health care system in Ukraine.

5. Conclusion

This study investigated the patterns (perception and determinants) of informal practices (as coping strategies) applied by patients in the health care sector in Ukraine. We use nationally representative data and statistical analysis to address this issue. Knowledge about the determinants of these informal practices brings policymakers closer to understanding profiles of the patients that are prone to using informal practices when facing barriers during health care service consumption. This knowledge could be used to tailor policies and develop nuanced formal strategies to reduce barriers, which are currently tackled by patients via informal practices. Future research is needed to zoom-in on specific informal practices and include such factors like medical diagnosis, prognosis, financial situation, cost of treatment, government protection, and the psychological state of the patient. This would allow us to draw a detailed picture of what coping strategies work best under what circumstances.

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