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Abstract

Objective: While sociodemographic factors affect health check-ups, less is known about the role of psychosocial factors. Based on a nationally representative longitudinal survey in the United Kingdom (UK), this study explores the association of satisfaction with multiple dimensions and loneliness with health check-ups.

Methods: We use microdata from the UK Household Longitudinal Study, representative of the UK adult population (2017-2022). A multiple linear regression model with interactions and fixed effects was used to analyze the relationship between both objective (having close friends) and subjective (feeling lonely) measures of loneliness and satisfaction in multiple dimensions (work, health, income, leisure time, and life) and five types of health check-ups: ophthalmology, blood pressure, cholesterol, X-rays, and blood tests. In addition, we analyzed the association between satisfaction and the probability of trust and openness toward friends as a mechanism to explain the relationship.

Results: Having more friends, feeling loneliness more often, and being satisfied with income were associated with greater use of different health check-ups. On the contrary, being satisfied with one's health was negatively associated health check-ups. Higher satisfaction levels were associated with greater trust and openness with friends, suggesting a potential explanatory mechanism.

Conclusion: Our study underscores the need for a comprehensive approach to understanding psychosocial factors in healthcare utilization. When designing future research and policy, it is crucial to consider objective and subjective indicators of individuals' psychosocial well-being and satisfaction across multiple dimensions.

Keywords: life satisfaction, loneliness, friends, preventive healthcare, routine health check-ups.

1. Introduction

Preventive healthcare services represent an essential protective factor for health, as they enable early disease detection, control of risk factors, and help reduce medical costs associated with treating severe illnesses (Liss et al., 2021; Valero-Elizondo et al., 2016). In particular, health check-ups, such as blood pressure measurements, blood tests, and cholesterol screenings, are helpful in the timely detection of metabolic risk factors linked to non-communicable diseases (Si et al., 2014). Knowing their health status through check-ups can motivate people with lifestyle-related diseases to make healthier choices (Kang et al., 2020).

In the United Kingdom (UK), the National Health Service (NHS) has provided universal, comprehensive, free healthcare services since 1948. To reduce cardiovascular disease risks and events, in 2009 it launched the NHS Health Checks program, providing a routine clinical assessment for adults aged 40–74. It includes measuring body mass index, blood pressure, kidney function, diabetes, and cholesterol and captures information on relevant lifestyle risk factors. Despite this, the uptake rate of health check-ups remains low in the UK (Labeit et al., 2013; Patel et al., 2020). Only 50% of those offered the NHS Health Checks program completed a check (Patel et al., 2020).

Considerable research has been undertaken to investigate the factors associated with health check-ups. Much of this literature has focused on sociodemographic and economic factors (Dryden et al., 2012; Labeit et al., 2013; Hoebel et al., 2014). Recently, however, studies have shown that psychological and psychosocial factors also influence health check-ups.

It was found that people with higher life satisfaction, a sense of purpose and self-esteem are more likely to participate in general health check-ups (Baek & Yoon, 2024; Datta et al., 2024; Hajek et al., 2018; Hajek et al., 2017; Kim et al., 2015). This can be explained by the fact that people who are more satisfied with their lives and have a higher degree of self-esteem and optimism are motivated to lead a healthy life and, therefore, engage in health-promoting behaviours (Grant et al., 2009; Thomas et al., 2020), including taking part in health check-ups. Additionally, psychosocial factors such as having a greater network size and social support, and feeling less lonely, also improve health check attendance (Datta et al., 2024; Stafford et al., 2018; Peng & Lin, 2018; Hajek et al., 2017; Vozikaki et al., 2017; Petrova et al., 2015; Hoebel et al., 2014; Ashida et al., 2010). The literature has suggested multiple pathways through which social connections might promote participation in preventive health services like health check-ups. These include providing information and spreading awareness about health risks and the benefits of primary care, offering emotional or financial support when needed, or reinforcing social norms linked to healthy behaviours (Berkman et al., 2000; Kawachi et al., 1996; Kamiya et al., 2010).

Identifying and understanding psychosocial barriers to health check-ups is essential for improving participation rates. Moreover, engagement in preventive healthcare might be one of the pathways linking psychosocial factors to mortality, as it has been shown that social disconnection and loneliness are risk factors for early mortality and morbidity (Holt-Lunstad et al., 2015; Elovainio et al., 2017; Kawachi et al., 1996). This is particularly relevant in a context where the prevalence of loneliness and social isolation has increased, and levels of life satisfaction and well-being have declined, during the COVID-19 pandemic and even before (Buecker & Horstmann, 2022; Marquez et al., 2022; Li & Wang, 2020). In fact, prior to the pandemic, the UK government recognized loneliness as a major public health issue (Holt-Lunstad, 2017). Despite this, to our knowledge, only one previous study has examined the relationship between social connectedness and health check-ups in the UK (Stafford et al., 2018). Controlling for socioeconomic factors and chronic disease, they found that having a small social network and low-quality relationships was associated with non-participation in health check-ups among people aged 68-69.

This study aims to advance the literature by examining the association between psychosocial factors and engagement in health check-ups in the UK, while exploring potential underlying mechanisms. We

complement previous research by considering a representative sample of the UK adult population (individuals aged 16 years and over), objective and subjective social isolation measures, and two psychological factors (different domains of life satisfaction and well-being).

Objective social isolation refers to being socially disconnected, i.e. a dearth of social contact and network size (Holt-Lunstad et al., 2015). It is often measured by social contact frequency, participation in social activities, the number of social ties, etc. In contrast, loneliness is the subjective perception of deficiencies in the person's social relations. It occurs when there is a discrepancy between the person´s network of social relations and the desired one (Perlman & Peplau, 1981). Although there may be a connection between these concepts, they are often only weakly related (Coyle & Dugan, 2012; Taylor, 2020). A larger social environment does not imply that a person does not feel lonely, and a small network may not lead to loneliness. Moreover, it has been found that loneliness and social isolation have differential effects on health outcomes (Hong et al., 2023), suggesting they are independent constructs.

Finally, we test the hypothesis that greater dissatisfaction across multiple dimensions is associated with less openness and trust toward friends. This may result in a more limited understanding of health risks and social support, and consequently, poorer engagement in health check-ups. This hypothesis is based on literature emphasizing a positive relationship between well-being, happiness, life satisfaction, and the friendship network (Demir et al., 2015; Amati et al., 2018). One of the mediators explaining this relationship is trust and closeness with friends, in the sense that those who are happier and more satisfied with their lives tend to be more trusting (Van der Horst & Coffé, 2012).

2. Methods

2.1. Data

The UK Household Longitudinal Study (2009-2022) is the main data source. Conducted by the Institute for Social and Economic Research at the University of Essex (ISER, 2023), it allows the creation of an annual panel of individuals representative of the UK adult population (aged 16 and older). We used data from Waves 10 (collected between December 2017 and May 2020) and 12 (collected between December 2019 and May 2022), which provided information on respondents' health check-ups, their socioeconomic circumstances, and their psychological and social characteristics.

A total of 37,495 individuals participated in either Wave 10 or 12, resulting in 63,590 observations. Those with missing data on health check-ups variables (n=1,203), psychosocial factors (n=34,131), and predisposing, enabling, and need factors (n=1,089) were excluded. Missing data includes refusals, ‘do not know’ responses, missing by error, inapplicable and people that cannot participate in the interview and someone else in the household answers some questions by proxy but not these ones. This process led to an analytic sample comprising 27,167 observations.

2.2 Variables

2.2.1. Use of preventive healthcare services

Individuals were asked whether they had undergone any of a list of eight health check-ups recommended by the NHS within the 12 months before the survey (yes/no). We considered five of these to be achievable for both men and women: ophthalmology, blood pressure measurements, cholesterol screenings, X-rays, and blood tests. We also excluded dental check-ups because they are not performed by a physician, are typically carried out in institutions that require payment, and are often for aesthetic or curative rather than preventive reasons.

2.2.2. Psychosocial factors

We considered three psychosocial factors: loneliness, having close friends, and satisfaction. Loneliness is measured by the single direct question, ‘How often do you feel lonely?’ with three possible responses:

'hardly ever or never', 'some of the time', or 'often'. We use the continuous variable, 'How many close friends would you say you have?' to describe individuals' objective loneliness. Including both variables simultaneously allows us to distinguish their potentially differing effects on preventive practices.

We also considered individuals' subjective satisfaction with life, leisure time, health, income, and work. These are measured on a scale from one (completely dissatisfied) to seven (completely satisfied). For the subsequent analysis, we recoded them into dichotomous variables, distinguishing between those who reported feeling mostly or completely satisfied and those in the other categories.

2.2.3. Predisposing, enabling, and need factors

Covariates were chosen following Andersen's Behavioral Model of Health Service Use (Andersen, 1995). The predisposing and enabling factors include age (in years), sex (male/female), marital status (never married, separated, divorced, widowed, living as a couple, married), educational level according to the highest attained (lower secondary, upper secondary, bachelor, master, doctorate or none), monthly income, and area of residence (urban/rural). As for the need factors, we considered diagnosed anxiety and depression disorders (yes/no).

2.3. Statistical analysis

Descriptive characteristics of the study population are presented as absolute and relative frequencies for categorical variables, and as means and standard deviations for continuous variables.

The association between psychosocial factors and health check-ups was examined using a multiple linear regression model, which includes fixed effects, adjusting for covariates as specified in Equation 1:

$$y_{irt} = Loneliness_{irt} + Satisfaction_{irt} + Loneliness_{irt} * Satisfaction_{irt} + X_{irt} + \gamma_r + \lambda_t + \mu_{irt} \quad (1)$$

y_{irt} is the outcome of interest *y* for person *i* residing in region *r* in year *t*. It encompasses the five types of health check-ups. $Loneliness_{irt}$ represents a vector of covariates that includes feeling lonely and having close friends. $Satisfaction_{irt}$ includes satisfaction with life, work, health, income, and leisure time. $Loneliness_{irt} * Satisfaction_{irt}$ represents the interaction term between the variable of subjective loneliness and life satisfaction. It allows us to test whether the effect of life satisfaction on check-ups depends on loneliness, given the correlation between these variables (Seifert, 2024). X_{irt} is the vector of control covariates that incorporates the predisposing, enabling, and need factors. γ_r and λ_t represent fixed effects by region of residence and year, respectively. These fixed effects account for unobserved heterogeneity between regions or over time. μ_{irt} is the model error term. Since public health insurance is provided by the NHS, which covers nearly the entire population, it is not necessary to include a variable for health coverage in the empirical analysis, as there is no variability.

Equation 1 is re-estimated adopting a different specification for the satisfaction dimension. In this case, we use a single subjective well-being variable, which converts responses from the 12-item General Health Questionnaire into a single scale ranging from 0 (the least amount of distress) to 36 (the greatest amount of distress).

Finally, we test whether there is a correlation between satisfaction and three variables that attempt to reflect the importance of friends, openness, and trust in them to investigate the mechanisms through which this psychosocial factor might affect health check-ups. We consider whether individuals agree that friendships are important, whether they feel they can open up to friends if they need to talk, and whether they can rely on them if they face a problem.

Our study was based on a publicly available anonymized database (https://www.understandingsociety.ac.uk/), and as such, it is exempt from ethical compliance

requirements. The University of Essex Ethics Committee previously granted ethical approval for the survey. Statistical analyses were performed using the Stata software (version 16.0; Stata Corp).

3. Results

Table 1 presents the basic descriptive statistics of the sample. On average, the surveyed population exhibits a balanced gender distribution (54% women), is of working age (mean age of 44), and has a high level of education (51% have attained a university degree). Approximately 3% reported anxiety and depression, and 6% often felt lonely. Additionally, respondents report moderate satisfaction levels, with between 33% and 59% expressing satisfaction in areas like leisure time and overall life. None of the health check-ups were performed by more than half of the sample (40% underwent an ophthalmological check-up, which was the most frequently performed, while only 9% had an X-ray).

[Table 1]

Table 2 presents the results from estimating Equation 1. After controlling for predisposing, enabling, and need determinants, having more close friends is associated with a higher likelihood of engaging in ophthalmology, blood pressure, and cholesterol screenings ($\beta = 0.015$, 0.006, and 0.006, respectively). Even when accounting for objective loneliness, a higher subjective perception of loneliness is linked to increased rates of blood and blood pressure tests, X-ray screenings, and ophthalmology exams (the latter is significant only for those who often feel lonely). Coefficients are higher when we focus on those who often feel lonely ($\beta = 0.060$, 0.046, 0.026, and 0.039, respectively). Greater satisfaction with income is also associated with a higher frequency of ophthalmology exams ($\beta = 0.017$), blood pressure screenings ($\beta = 0.016$), and cholesterol tests ($\beta = 0.014$), while greater satisfaction with one's health is associated with a lower likelihood of having any health check-ups.

[Table 2]

These results remain consistent despite using subjective well-being instead of a satisfaction variable (Appendix Table A.1). There is a positive and significant relationship between higher levels of well-being and the performance of all health check-ups, except for ophthalmology ($\beta = 0.004$ for blood pressure and X-ray screenings, $\beta = 0.001$ for cholesterol screening, and $\beta = 0.007$ for blood test).

Table 3 presents the results of the proposed mechanism through which satisfaction variables could be related to the performance of health check-ups. Experiencing lower satisfaction with work, life, and leisure time is associated with reduced importance, trust, and openness toward friends (satisfaction with health is also significant for importance and trust; satisfaction with income is only significant for trusting friends).

[Table 3]

4. Discussion

Throughout this paper, we have presented evidence on the determinants of health check-ups, contributing to the literature by including psychosocial factors and using panel data representative of the adult population in a high-income country—the United Kingdom. Our work underscores the importance of considering both objective and subjective loneliness and satisfaction across multiple dimensions when analyzing the determinants of health check-ups.

Our findings indicate that having more close friends is associated with higher participation in health check-ups (specifically ophthalmology, blood pressure, and cholesterol screening). This aligns with recent empirical evidence suggesting that having a great network size and social support increases the use of preventive care (Stafford et al., 2018; Peng & Lin, 2018; Vozikaki et al., 2017; Petrova et al., 2015; Ashida et al., 2010). Friends and social connections enhance awareness of health risks and encourage the use of health services (Thoits, 2011; Latkin & Knowlton, 2015; Berkman et al., 2000).

In this sense, social networks act as a context for providing the necessary information to promote and facilitate access to healthcare. Furthermore, friends can offer practical, financial, and emotional support, helping individuals feel confident in their decision-making. Likewise, they can influence various health behaviors, such as engaging in physical activity, which contribute to a healthier lifestyle (Broman, 1993; Umberson et al., 2010). Additionally, social networks can reinforce a sense of meaning, thus motivating preventive healthcare.

Frequently feeling lonely is also linked to greater use of health check-ups (except cholesterol screening). This may seem contradictory to the previous result. However, as mentioned earlier, objective isolation is not necessarily synonymous with loneliness (Perlman & Peplau, 1981). This is because loneliness is subjective. Our results reinforce that having fewer close friends and feeling lonely cannot be treated as equivalent predictors of health check-ups, as objective isolation and loneliness impact individuals in different ways. At this point, the results of previous research are diverse. While some studies have found that loneliness is associated with poorer preventive care (Datta et al., 2024; Hajek et al., 2017), our results are consistent with others reporting a positive relationship between feelings of loneliness and the use of primary healthcare services (Aloha et al., 2024; Sirois & Owens, 2023; Ellaway et al., 1999). Our findings indicate that individuals who experience loneliness tend to view friendships as less critical and struggle with opening up and trusting others. In such cases, doctor visits may substitute for this perceived lack of social support. Additionally, when it comes to preventive healthcare, those feeling lonely may anticipate that they will have no one to rely on but themselves in the event of illness. This self-reliance may heighten their concern for their health, prompting them to participate in health check-ups.

Furthermore, our results show that people with higher satisfaction levels, especially regarding income, and subjective well-being, are more likely to participate in health check-ups. The mechanism analysis confirms our hypothesis that those with greater satisfaction are more inclined to trust their friends and view them as an essential part of their lives. In this sense, individuals with higher satisfaction levels benefit from stronger social connections that provide information and practical and emotional support, thus promoting health check-ups. Contrary to some evidence (Baek & Yoon, 2024; Datta et al., 2024; Hajek et al., 2018; Kim et al., 2015), our study disaggregates life satisfaction into multiple dimensions and recognizes the importance of allowing for this heterogeneity.

This study has several strengths. To our knowledge, it is the first to analyze the relationship between psychosocial factors and health check-ups using panel data representative of the UK adult population. It provides robust evidence for considering objective and subjective psychosocial well-being indicators as determinants of these preventive practices. Specifically, it distinguishes between loneliness and social isolation, and includes variables related to satisfaction across multiple dimensions, not just life satisfaction. We focus on specific check-ups rather than an overall measure, which allows us to analyze the influence of the psychosocial factors according to the type of health check-up. We also contribute to analyzing potential mechanisms through which satisfaction may influence health check-up engagement.

Our study also has some limitations. Firstly, we focused only on health checks that both men and women can carry out. Future research should also focus on sex-specific screenings, as results may vary depending on the health check-up being analyzed. Secondly, it was not possible to distinguish whether routine health checks were carried out voluntarily or as a complement to other health checks, and whether they were carried out preventively or in the context of disease management. Thirdly, these measures are self-reported, which could introduce potential biases. Future research should use medical records or administrative data. Fourthly, we used only one measure of objective loneliness, even though the concept encompasses the inadequate social relationships at different levels (individual, community, and broader social environment). Unfortunately, we could not include other measures due to data availability. Finally, the study's exclusion criteria may have limited generalizability due to missing data,

especially regarding psychosocial factors. This is because some variables, such as satisfaction with income or work, were only available for participants who were employed, thus restricting the sample. Also, our results may not be generalizable to specific subgroups (e.g., population in small rural areas or minorities).

The results of this study carry essential policy and methodological implications for future research. Enhancing satisfaction levels and fostering closer friendships should be explicitly integrated into policies promoting preventive healthcare. This is essential, as these psychosocial factors are modifiable. Policies and interventions to foster social connections may also effectively improve health check-ups participation. Our results also make it possible to identify populations at risk of not using health check-ups, enabling the implementation of targeted policies to increase participation. Individuals who are less satisfied or have fewer close friends are at risk and may benefit from preventive health campaigns. This is particularly relevant in the context of the under-utilization of health check-ups. Additionally, given the heterogeneity in satisfaction effects across different indicators, each of these should be considered in empirical analyses.

In the future, expanding the analysis in two directions would be valuable. First, including other countries, particularly those in the Global South, would allow for exploring potential heterogeneity in the findings and assess the external validity of the results. Second, considering the growing internet use and concerns about its impact on mental health, it would be relevant to examine its potential effects on preventive health practices.

5. Conclusions

We found that psychosocial factors are strongly associated with health check-ups. Both subjective and objective loneliness, satisfaction, and well-being emerged as significant determinants of various health check-ups. This suggests that psychosocial factors should also be considered when analyzing preventive practices, in addition to the typical predisposing, enabling, and need determinants. These results highlight the importance of incorporating psychosocial determinants into public health policies to improve adherence to preventive healthcare services.

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Credit authorship contribution statement

Fernando Antonio Ignacio Gonzalez: Conceptualization, Investigation, Methodology, Formal analysis, Data curation, Writing – original draft, Writing – review & editing, Visualization.

Gimena Ramos: Conceptualization, Investigation, Methodology, Formal analysis, Writing – original draft, Writing – review & editing, Visualization.

Declaration of competing interest

None of the authors have any conflicts of interest.

Data availability

All data are publicly available.

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Table 1. Sample characteristics of adult population included in the United Kingdom Household Longitudinal Study (2017-2022).

Variables	N / mean	% / standard deviation
Sociodemographic characteristics		
Age (in years)	44.0	13.5
Sex		
Men	12,500	46
Women	14,667	54
Education		
Doctorate	5	0.0
Master	4,933	18.2
Bachelor	8,994	33.1
Upper secondary	6,144	22.6
Lower secondary	6,363	23.4
None of them	728	2.7
Marital status		
Married	15,291	56.3
Living as couple	3,493	12.9
Widowed	336	1.2
Divorced	1,561	5.7
Separated	404	1.5
Never married	6,082	22.4
Area of residence		
Urban	20,631	75.9
Rural	6,536	24.1
Monthly income	2548.8	1839.3
Health diagnosis (yes)		
Anxiety	785	2.9
Depression	793	2.9
Psychosocial factors		
Loneliness		
Often	1,733	6.4
Sometimes	8,439	31.1
Never	16,995	62.5
Close friends	0.24	1.4
Mostly/completely satisfied with:		
Life	14,599	53.7
Work	16,037	59.0
Health	13,806	50.8
Income	11,613	42.7
Leisure time	9,169	33.7
Health check-up (yes)		
Ophthalmology	10,982	40.4
Blood pressure	9,341	34.4
Cholesterol screening	3,814	14.0
X-rays	2,600	9.6

Blood test	9,347	34.4

Mean and standard deviation were reported for age, monthly income, and number of close friends. N and % were reported for the rest of the variables.

Table 2. Association between psychosocial factors and health check-ups among adult population included in the United Kingdom Household Longitudinal Study (2017-2022). Results of multiple linear regressions.

Independent variables	Ophthalmology	Blood pressure	X-rays	Cholesterol screening	Blood tests
Close friends	0.015***	0.006**	0.001	0.006***	0.002
	(0.004)	(0.002)	(0.001)	(0.001)	(0.002)
Sometimes loneliness	0.012	0.015*	0.014**	-0.006	0.0189**
	(0.009)	(0.009)	(0.006)	(0.006)	(0.009)
Often loneliness	0.039***	0.046***	0.026***	0.004	0.060***
	(0.014)	(0.014)	(0.009)	(0.009)	(0.014)
Satisfaction with income	0.017**	0.016**	0.006	0.014***	0.002
	(0.007)	(0.007)	(0.004)	(0.005)	(0.007)
Satisfaction with health	-0.014**	-0.092***	-0.059***	-0.041***	-0.118***
	(0.007)	(0.007)	(0.004)	(0.005)	(0.007)
Satisfaction with work	0.007	-0.001	0.002	0.003	-0.002
	(0.006)	(0.006)	(0.004)	(0.004)	(0.006)
Satisfaction with life	0.016	-0.016	-0.019	0.009	-0.028
	(0.034)	(0.034)	(0.021)	(0.022)	(0.034)
Satisfaction with leisure time	0.008	0.003	-0.001	0.003	0.007
	(0.007)	(0.007)	(0.004)	(0.005)	(0.007)
Never loneliness and Satisfaction with life	-0.003	0.029	0.018	-0.016	0.028
	(0.035)	(0.034)	(0.021)	(0.023)	(0.034)
Sometimes loneliness and Satisfaction with life	0.003	0.034	0.017	-0.011	0.035
	(0.036)	(0.035)	(0.022)	(0.023)	(0.035)
Predisposing and enabling determinants	Yes	Yes	Yes	Yes	Yes
Need determinants	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes
R^2	0.054	0.077	0.027	0.097	0.066
Mean VIF	4.07	4.07	4.07	4.07	4.07
N	27,167	27,167	27,167	27,167	27,167

Adjusted for: Age, sex, marital status, education, monthly income, area of residence, diagnosed anxiety and depression disorders, region of residence and year of the survey; Coefficients are reported; Robust standard errors in parentheses; Mean VIF: variance inflation factor; * p<0.1, ** p<0.05, *** p<0.01.

Table 3. Association between psychosocial factors and importance, trust, and openness towards friends, among adult population included in the United Kingdom Household Longitudinal Study (2017-2022). Results of multiple linear regressions.

Independent variables	Friends are important	I can open up to my friends	I can trust in my friends
Close friends	0.009**	0.001	0.007
	(0.004)	(0.003)	(0.005)
Sometimes loneliness	-0.053***	-0.104***	-0.101***
	(0.012)	(0.009)	(0.009)
Often loneliness	-0.079***	-0.143***	-0.132***
	(0.021)	(0.017)	(0.017)
Satisfaction with income	0.012	0.011	0.023**
	(0.012)	(0.009)	(0.009)
Satisfaction with health	0.036***	0.009	0.028***
	(0.012)	(0.009)	(0.009)
Satisfaction with work	0.066***	0.043***	0.05***
	(0.011)	(0.008)	(0.008)
Satisfaction with life	0.084***	0.063***	0.077***
	(0.013)	(0.01)	(0.01)
Satisfaction with leisure time	0.037***	0.033***	0.034***
	(0.012)	(0.009)	(0.009)
Predisposing and enabling determinants	Yes	Yes	Yes
Need determinants	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes
R^2	0.071	0.089	0.069
Mean VIF	1.95	1.92	1.92
N	9,707	15,152	15,150

Adjusted for: Age, sex, marital status, education, monthly income, area of residence, diagnosed anxiety and depression disorders, region of residence and year of the survey; Coefficients are reported; Robust standard errors in parentheses; Mean VIF: variance inflation factor; * p<0.1, ** p<0.05, *** p<0.01.

Appendix

Table A.1. Association between psychosocial factors and health check-ups among adult population included in the United Kingdom Household Longitudinal Study (2017-2022), using Subjective well-being as an alternative to Satisfaction. Results of multiple linear regressions.

Independent variables	Ophthalmology	Blood pressure	X-ray	Cholesterol screening	Blood tests
Close friends	0.016***	0.006**	0.001	0.006***	0.002
	(0.004)	(0.002)	(0.001)	(0.001)	(0.002)
Sometimes loneliness	0.007	0.012*	0.011***	-0.000	0.018***
	(0.007)	(0.007)	(0.004)	(0.005)	(0.007)
Often loneliness	0.03**	0.027**	0.012	0.011	0.039***
	(0.014)	(0.013)	(0.009)	(0.009)	(0.013)
Subjective well-being	-0.000	0.004***	0.004***	0.001**	0.007***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
Predisposing and enabling determinants	Yes	Yes	Yes	Yes	Yes
Need determinants	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes
R^2	0.053	0.071	0.021	0.095	0.057
Mean VIF	2.01	2.01	2.01	2.01	2.01
N	27,008	27,008	27,008	27,008	27,008

Adjusted for: Age, sex, marital status, education, monthly income, area of residence, diagnosed anxiety and depression disorders, region of residence and year of the survey; Coefficients are reported; Robust standard errors in parentheses; Mean VIF: variance inflation factor; * p<0.1, ** p<0.05, *** p<0.01.

Life satisfaction, loneliness, and routine health check-ups: Evidence from the UK Household Longitudinal Study

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Declaration of interests

☒ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

☐ The author is an Editorial Board Member/Editor-in-Chief/Associate Editor/Guest Editor for *[Journal name]* and was not involved in the editorial review or the decision to publish this article.

☐ The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Highlights

- We explored the association between satisfaction, loneliness and health check-ups.
- Income satisfaction and having friends were positively linked to health check-ups.
- Subjective loneliness was also associated with health check-ups.
- Satisfied people trust friends more and gain from stronger social connections.