Perceptions of quality and safety and experience of adverse events in 27 European Union healthcare systems, 2009–2013

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Abstract

Objective: To assess trends in the perception of quality and safety between 2009 and 2013 in the European Union (EU).

Design: We analysed data from waves 72.2 and 80.2 of the Eurobarometer survey. Multilevel logistic regression models adjusted for sociodemographic factors and country-level health expenditure were fitted to assess changes between 2009 and 2013 in each of the assessed outcomes.

Setting: Twenty-seven EU member states.

Participants: A total of n = 26 663 (2009) and n = 26 917 (2013) individuals aged ≥15 years.

Main outcome measure(s): Outcomes included the perception of being harmed in hospital and non-hospital care; rating of the overall quality of the healthcare system; and personal or family experience of adverse events.

Results: Respondents in 2013 were more likely to think that it was likely to be harmed in hospital (Odds Ratio [OR] = 1.09; 95% Confidence Interval [CI]: 1.05–1.13; P < 0.001) and non-hospital care (OR = 1.11; 95% CI: 1.07–1.15; P < 0.001), compared to 2009. However, they were more likely to rate the quality of their country’s healthcare system as good (OR = 1.26; 95% CI: 1.21–1.32; P < 0.001) and no significant change over time was identified in reported experience of adverse events (OR = 1.00; 95% CI: 0.95–1.05; P = 0.929). Lower health expenditure and decrease in health expenditure between the two waves were associated with worse outcomes in overall quality and perceptions of harm. There was significant variation between and within countries in all indicators.

Conclusions: The public’s perception of safety in European healthcare systems declined in recent years, which highlights that there are safety issues that could be addressed.

Key words: adverse events, patient safety, health policy, public health

Introduction

Patient safety is considered a major concern by the World Health Organization, with approximately one in ten hospitalized patients experiencing an adverse event caused by healthcare management [1], incurring significant costs for the health systems [2]. Reduced staff, shift work, poor sleep and mental health, as well as long working hours are some of the many factors which contribute to medical errors and the overall quality of healthcare [3–7]. Aside from
objective measures of adverse events, perceptions of patient safety are also important to recognize.

Understanding the factors which affect the public’s perception of the safety and quality of healthcare may offer the foundation for effective policies targeting improvement of service access and national healthcare quality [8]. Previous studies have highlighted the role of socioeconomic factors and health expenditure levels in how people see their national healthcare systems and how the balance between public and private funding can influence this [8, 9].

The recent economic crisis in Europe has placed a strain on healthcare systems. Some countries took measures such as reducing or freezing health professionals’ salaries [10], reducing expenditure on drugs and freezing healthcare worker recruitment [11]. As a result, concerns have been raised that there might be negative consequences on the quality of healthcare and patient safety [12]. However, evidence of changes in quality and safety in European health systems during the recession is sparse.

Studying trends in perceptions of quality and safety may provide an insight in the effects of budget cuts in European health systems. Therefore, we analysed data from two Eurobarometer surveys, in order to assess trends in the perceptions of healthcare and experience of adverse events between 2009 and 2013.

Methods

Data source

We analysed data from two waves of cross-sectional data from the Eurobarometer survey: 72.2 (n = 26,663, 2009) [13] and 80.2 (n = 26,917, 2013) [14]. Data were collected through face-to-face interviews with a representative sample of individuals aged ≥15 years in 27 European Union member states. The Eurobarometer surveys use a random, multi-stage sampling method and post-stratification sample weighting is applied. As a result, samples are representative of the population by age, gender and area of residence, both at a country and at the EU level.

Measures

Sociodemographic

Data were collected on respondents’ age (‘15–34 years’; ‘35–54’; and ‘≥55’), age when they stopped full-time education (no full-time education/up to 15 years; 16–18; 19–21; and ≥22), gender (male; female) and area of residence (rural; urban). They were also asked whether they had difficulties in paying bills (over the last 12 months) and were grouped based on their response in those who had difficulties ‘most of the time’, ‘from time to time’ and ‘almost never/never’.

Perceptions of quality and safety

Perception of the quality of the healthcare system was assessed with the question ‘how would you evaluate the overall quality of healthcare in (our country)?’ Responses were grouped into ‘good’ (‘very good’ or ‘fairly good’) or ‘bad’ (‘very bad’ or ‘fairly bad’). Perceptions of the likelihood of being harmed were assessed with the questions ‘how likely do you think it is that patients could be harmed by hospital care in (our country)?’ By hospital care we mean being treated in a hospital as an outpatient or inpatient and ‘how likely do you think it is that patients could be harmed by non-hospital healthcare in (our country)?’ By non-hospital healthcare we mean receiving diagnosis, treatment or medicine in a clinic or surgery of your general practitioner or in a pharmacy’. Responses were grouped into ‘likely’ (‘very likely’ or ‘fairly likely’) or ‘unlikely’ (‘not very likely’ or ‘not at all likely’). Participants were also asked ‘have you or a member of your family ever experienced an adverse event when receiving healthcare? Yes or No’. The following definition of adverse events was read out to all participants: ‘Being harmed when receiving healthcare is also referred to as “adverse events”’. “Adverse events” include hospital infections; incorrect, missed or delayed diagnoses; surgical errors; Medication related errors (wrong prescription, wrong dose, dispensing error in pharmacy, wrong administration route); Medical device or equipment related errors’.

Health expenditure

Data on health expenditure per capita (in dollars) in 2009 for all 27 countries were collected from the World Bank database [15]. The change in health expenditure per capita (%) was also calculated by comparing expenditure in 2013–2009 (Supplementary Table 1).

Statistical analysis

Descriptive results are presented as % with 95% Confidence Interval (95% CI) or number of observations (n) as appropriate. Multilevel logistic regression analyses were performed to assess associations between the year of the survey and the following outcomes: probability of harm in hospital and non-hospital care; overall quality of healthcare in the country; and reporting experience of an adverse event. Results were adjusted for age, gender, education, area of residence, difficulties in paying bills, health expenditure per capita in 2009 (dollars) and change in health expenditure from 2009 to 2013 (%). The interaction between the year of survey and difficulties in paying bills, as well as between the survey year and area of residence were also explored in order to detect differential changes over time among different income groups, but were dropped from the final model if they were not statistically significant. Regression results are presented as adjusted Odds Ratios (ORs) with 95% CI. For health expenditure per capita, the OR are presented for a $500 lower expenditure, in order to improve interpretability of the results. Similarly, for the change in expenditure from 2009 to 2013, the OR are presented for a 5% decrease in expenditure. Changes in perceptions, calculated as the % change in the proportion of the population that gave each of the responses in 2013 compared to 2009, were plotted against the % change in health expenditure. Population size weights provided in the Eurobarometer datasets were used in descriptive analyses.

Results

Perceptions of probability of harm in hospital and non-hospital care

Overall, 52% of the respondents believed that it was likely to be harmed in hospital care in 2009 and 57% in 2013, while the respective proportions for non-hospital care were 48.7% in 2009 and 54.7% in 2013, with great variability between countries (Supplementary Table 3, Fig. 1). After adjusting for sociodemographic and macroeconomic factors, respondents in 2013 were more likely to think that it was likely to be harmed in both hospital (OR = 1.09; 95% CI: 1.05–1.13; P < 0.001) and non-hospital care (OR = 1.11; 95% CI: 1.07–1.15; P < 0.001) (Table 1). People who had difficulties paying their bills were also more likely to report fear of being harmed in both settings with the ORs for those who had difficulties ‘most of the time’ being higher than those who had difficulties ‘from time to time’. Lower total health expenditure per capita (OR = 1.11 [P = 0.011] for hospital care and OR = 1.12
Perceived quality of healthcare

In total, 71% of the respondents in 2009 and 72% in 2013 rated the quality of the healthcare system as good although there were substantial differences between countries (Supplementary Table 4, Fig. 1). However, after fitting the multilevel logistic regression model, respondents were more likely to rate the quality of their country’s healthcare system as good in 2013, compared to 2009 (OR = 1.26; 95% CI: 1.21–1.32; P < 0.001) (Table 2). Women, people younger than 55 years and those with financial difficulties were less likely to rate the healthcare system as good. Those who had difficulty paying bills from time to time had an OR = 0.80 (95% CI: 0.76–0.85; P < 0.001) compared to those who never or almost never had difficulties, whereas the OR for those who had difficulty most of the time was even lower (OR = 0.60; 95% CI: 0.56–0.64; P < 0.001). Lower health expenditure at a country level (OR = 0.70; P < 0.001) and decrease in health expenditure over time (OR = 0.85; P = 0.038) were significantly associated with lower odds of rating the healthcare quality as good.

Experience of adverse events

The proportion of the respondents who reported experiencing an adverse event was 27.0% in 2009 and 27.6% in 2013 and no significant change over time was identified after fitting the multilevel logistic regression model (OR = 1.00; 95% CI: 0.95–1.05; P = 0.929) (Table 2). However, the percentage of respondents reporting an adverse event significantly increased in 18 countries and decreased in five countries (Supplementary Table 4, Fig. 1). Higher education was positively associated with the odds of reporting an adverse event, with the ORs increasing as the age when respondents stopped full-time education increased (OR = 1.17,
OR = 1.35 and OR = 1.55 for having stopped education at 16–18, 19–21, and ≥ 22 years old, respectively; \( P < 0.001 \). People with occasional (OR = 1.18; 95% CI: 1.10–1.26; \( P < 0.001 \)) and regular difficulties in paying bills (OR = 1.82; 95% CI: 1.65–2.00; \( P < 0.001 \)) were more likely to report having experienced an adverse event. However, the interaction term between difficulty to pay bills and survey year was significant, indicating that those who had difficulties to pay bills most of the time were less likely to report experience of adverse events in 2013 compared to 2009, but not those who never had difficulties to pay bills. The proportion of respondents who reported adverse events increased slightly among those who never (27.0% in 2009 to 28.5% in 2013) or occasionally had problems paying their bills (24.7–25.1%), but decreased sharply among those who had difficulties most of the time (37.5–29.9%). Finally, lower health expenditure at baseline was associated with lower odds of reporting an adverse event (OR = 0.93; 95% CI: 0.87–0.99 for a $500 decrease; \( P = 0.034 \)), but not the change in expenditure between 2009 and 2013.

### Discussion

Our analysis showed that Europeans aged ≥ 15 years were more likely to believe that they may be harmed in healthcare in 2013, compared to 2009, but not to report experience of adverse events. Additionally, Europeans were more likely to rate their country’s healthcare as good in 2013, compared to 2009. We found great variation in perceptions and experience between sociodemographic groups, however there was little evidence of differential changes over time in these population subgroups, with the exception of adverse events.

The reported increase in perceptions of the likelihood of harm in healthcare does not come as a surprise, considering the cuts in health expenditure in several European countries. However, we found no significant overall increase in reports of adverse events by respondents during the same period. These contradictory findings may be explained by the role of the media in shaping perceptions about patient safety in healthcare. Concerns that financial restraints could undermine the safety standards of the healthcare system may have led to greater media interest in cases of harm within the healthcare system. The public rely heavily on media to develop conclusions about healthcare, something that has been highlighted when extensive media coverage of hospital acquired infections including Methicillin-resistant Staphylococcus aureus in the United Kingdom was accompanied by a decline in the public's satisfaction with hospital cleanliness [16].

On the contrary, perceptions of the overall quality of the healthcare system improved between 2009 and 2013, which could be seen as contradictory to the trends of perceptions of safety. However, safety is only one aspect of the healthcare system and safety concerns could be overshadowed by positive views on other aspects of the healthcare system [7], such as access, technological advances, waiting times and cost. Moreover, patient experience has been found to explain only a small proportion of the variation in satisfaction with the healthcare system; other factors, such as patient expectations, health and socioeconomic status could heavily influence individuals’ views of healthcare, regardless of their personal experience of care [17].
Higher baseline health expenditure and increase in healthcare spending were, unsurprisingly, associated with better perceptions regarding potential harm and the overall quality of healthcare. Well-funded health systems can be better equipped with staff and medical resources and these factors have been linked to increased patient satisfaction [9, 21], while reductions in health workforce can put a strain on health systems and increase medical errors [6, 22, 23]. However, respondents from countries where health expenditure was higher were more likely to report experience of an adverse event. Even though we adjusted for factors such as education, which can affect the awareness of adverse events - as indicated by the finding that people with higher education were more likely to experience an adverse event - there may still be residual confounding. It must be noted, though, that high health expenditure may not necessarily mean high-quality healthcare; the equitable allocation of funds is crucial, especially in health systems like the ones in the EU, which are relatively well-funded. Thus, if increases in health expenditure are coupled with downsizing in workforce, they might not lead to improved outcomes.

Regarding sociodemographic factors that were associated with perceptions of harm and quality, our results are consistent with previous research. In our analysis, older respondents were more likely to believe they could be harmed in healthcare, which is reasonable, as they have higher utilization of health services and can be more satisfied with the healthcare system [17] and the care they received [20].

Interestingly, we found no differential changes between 2009 and 2013 in the perceptions of harm and quality among subgroups by area of residence and difficulties paying bills. This finding could mitigate concerns that budget cuts and increases in out of pocket payments might have disproportionately affected disadvantaged groups, such as people with financial problems and those living in rural areas which generally have worse access to health services [18]. On the contrary, the proportion of people facing financial difficulties who reported an adverse event decreased substantially within this 4-year period. Whether this could be explained by more equitable access to healthcare, as a result of restructuring health systems in order to address excess spending or by underutilization of health services is unclear. Further research is required to disentangle factors that could potentially confound the association between financial status, access and experiencing adverse events, as well as differences between EU countries, which may follow quite different approaches regarding patient safety [19]. Despite that, though, people with financial difficulties were more likely to believe they could be harmed in hospital and non-hospital care, as well as to report an adverse event, and less likely to rate healthcare quality as ‘good’. This highlights the inequities in access to healthcare in the EU and confirms findings from other studies, where people with higher income were more satisfied with the healthcare system [17] and the care they received [20].
vulnerable to hospital acquired infections, falls, and post-operative complications, including wound, cardiac and respiratory complications [24, 25]. Females were more likely to believe they will be harmed while receiving healthcare and less likely to positively rate the quality of healthcare compared to males, supporting previous findings [26–28]. While differences between urban and rural areas were minimal, it’s worth mentioning that respondents in urban areas were more concerned about non-hospital care compared to those living in rural areas. This might reflect less trust in primary care services in cities. In general, concerns about the safety of non-hospital services were as widespread as concerns about hospitals. Considering that non-hospital services is the first point of contact in most health systems, this is particularly important, as a greater proportion of the population is subject to harm from primary care services and access to those services may have a big impact on population health.

Strengths and limitations

To the authors’ knowledge, this is the first study to explore trends in perceptions of quality and safety of the healthcare system at an EU level in recent years. We analysed data from two cross-sectional surveys, which used the same sampling methodology and questions across all countries and waves. Therefore, it was possible to detect any changes over time and meaningful associations in a representative sample of the EU population. The large sample size also allowed us to control for several sociodemographic and macroeconomic factors. Nonetheless, a major limitation of the study is that all data were self-reported and, as such, subjective to misclassification, hence we can only comment on perceptions and not objective measures of quality and safety. Data on health expenditure were collected at an ecological level, therefore might not accurately reflect personal circumstances, especially in countries where health inequalities are pronounced. Moreover, there were no data on use and access to healthcare, which might have influenced people’s responses. Thus, residual confounding cannot be excluded and our findings may be partly attributed to factors such as occupation, for which we haven’t adjusted. Finally, the cross-sectional nature of the surveys does not allow for causal inferences.

Policy implications

This study highlights that there are important issues of safety and quality in European healthcare systems that could be addressed. The proportion of respondents who reported experience of an adverse event is concerning, which is reflected in the high proportion of people who were concerned that they might be harmed when receiving hospital or/and non-hospital care. Changes introduced in European health systems during the recession and post-recession era seem to have increased the concerns about safety among the population. The differential change in experience of adverse events among different socioeconomic groups might also indicate underutilization of health services among individuals facing financial difficulties, while increases in health expenditure did not necessarily lead to improved outcomes.

These findings should alarm decision makers in the EU, as, despite the increasing overall spending and the improved perceived quality of healthcare, European citizens are increasingly concerned about their personal experience within the healthcare system. This may potentially lead to underutilization of available services because of a lack of trust or fear of adverse events, with obvious negative consequences in the population’s health. Governments and healthcare providers need to seek ways to restore the public’s trust in the healthcare systems in parallel with macroeconomic considerations, which are obviously important in an era when all healthcare systems in Europe are faced with constrained budgets.

Supplementary material

Supplementary material is available at INTQHC Journal online.

References

15. World Bank, World Bank Open Data.


