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# Income-related differences in out-of-hours primary care telephone triage: using national registration data

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**ABSTRACT**

**Background** Telephone triage is used to facilitate efficient and adequate acute care allocation, for instance in out-of-hours primary care services (OPCSs). Remote assessment of health problems is challenging and could be impeded by a patient's ambiguous formulation of his or her healthcare need. Socioeconomically vulnerable patients may experience more difficulty in expressing their healthcare need. We aimed to assess whether income differences exist in the patient's presented symptoms, assessed urgency and allocation of follow-up care in OPCS.

**Method** Data were derived from Nivel Primary Care Database encompassing electronic health record data of 1.3 million patients from 28 OPCSs in 2017 in the Netherlands. These were linked to sociodemographic population registry data. Multilevel logistic regression analyses (contacts clustered in patients), adjusted for patient characteristics (eg, age, sex), were conducted to study associations of symptoms, urgency assessment and follow-up care with patients' income (standardised for household size as socioeconomic status (SES) indicator).

**Results**:The most frequently presented symptoms deduced during triage slightly differed across SES groups, with a larger relative share of trauma in the high-income groups. No SES differences were observed in urgency assessment. After triage, low income was associated with a higher probability of receiving telephone advice and home visits, and fewer consultations at the OPCS.

**Conclusions** SES differences in the patient's presented symptom and in follow-up in OPCS suggest that the underlying health status and the ability to express care needs

affect the telephone triage process . Further research should focus on opportunities to better tailor the telephone triage process to socioeconomically vulnerable patients

## Introducton

People can turn to out-of-hours primary care services (OPCSs) in a number of Western countries, such as the UK, Norway, Denmark, Australia and the Netherlands,[1] in case of non-life-threatening but acute health problems during closing hours of daytime general practice (DGP). To facilitate adequate healthcare allocation and relieve acute care services from overcrowding, telephone triage is used in OPCS and other acute care services.[1–4] By remote assessment of the patient's healthcare need, a triage nurse determines the urgency of the patient's symptoms and the required response time.

Remote assessment of the patient's healthcare need calls for a delicate balancing act between patient safety and efficient resource allocation.[2 3 5 6] Triage nurse–patient interactions may not well fit protocolled decision support systems[5 7] (box 1). For instance, the conversation may be affected by emotions of the caller[5 7] or the structure of enquiry by the triage nurse.[8] Language proficiency and quality of the communication between the patient and triage nurse relate to compliance to triage recommendations.[9] Consequently, whereas triage decisions should be driven by healthcare need, ambiguity in the triage conversation may lead to unintended outcomes. Underestimation of the urgency occurs in approximately 10% of the triage contacts and threatens patient safety.[3 10] Overestimation of the urgency (estimates range from 1% to 19%[3 10–12]) yields needless worry and distress, and high workload of healthcare professionals.[13]

Expressing the nature of their symptoms and concerns may be more difficult for patients with a low socioeconomic status (SES), due to underlying disease and comorbidity,[14] and lower levels of health literacy.[15] SES is generally conceptualised as someone's position in society and typically operationalised as income, education or occupation.[15] Lower income was found to be related to frequent attendance of OPCSs,[16] and our previous research demonstrated higher rates of OPCS use in low-SES neighbourhoods.17 Understanding whether and at what point the telephone triage process varies by patients' SES may provide leads to tailor the triage process to the need of socioeconomically vulnerable patients. With this study, we therefore aimed to determine to what extent patients' SES related to the telephone triage process in OPCSs. Specifically, we measured socioeconomic differences in the main symptom the patient presented with, the assessed level of urgency and the follow-up care in OPCSs.

## Methods

### Setting

In the Netherlands, every citizen is enlisted in a general practice. During working days, patients with health problems turn to their DGP.[3] For patients who need medical attention during out-of-office hours, general practitioners (GPs) have organised themselves in large-scale OPCSs. Approximately 50 OPCSs each serve a catchment area of 100 000–500 000 inhabitants on behalf of 50–250 affiliated GPs.[4] OPCSs are part of the emergency care chain, which also includes emergency ambulatory care (ambulance and medical mobile teams) and hospital EDs. OPCSs are increasingly co-located with EDs, and the majority are accessible during all out-of-hours, including weekdays' evenings and nights, weekends, and public holidays.[4] About 90%–95% of the patients have the first contact by phone, and occasionally patients self-refer to an OPCS. Self-referring patients are not included in this study. The telephone triage process, which is used in all OPCSs in the Netherlands, is described in detail in box 1.

### Study design and study population

Retrospectively collected data concerning triage and follow-up of contacts reimbursed by health insurance in OPCS were derived from electronic health records (EHRs) from 28 OPCSs participating in

Nivel Primary Care Database in 2017 (from 1 January to 31 December).[18] The sociodemographic composition of the represented catchment areas (covering about 60% of the general population in the Netherlands) largely resembled the general population in the Netherlands.[17 18] Data were linked to sociodemographic variables from the System of Social Databases (SSD) of Statistics Netherlands.[19] Of the initial patient population from the Nivel Database, 12.3% (n=161 086) could not be linked due to missing patient IDs or unknown income/living in an institution (online supplemental table 1). Excluded patients were generally older than included patients. Multiple contacts per day for the same patient, same type of contact and identical diagnosis code were treated as one contact.

## Measures

### Outcome measures

*Presenting symptoms* included the main symptom that summarised the patient's health condition. The five most frequently presented symptoms were dichotomised (yes=1/no=0).

*Urgency assessment* included the urgency levels reflecting the recommended time for action. The measure was dichotomised in high urgency (yes=1 for U1–U3/no=0 for U4 and U5).

Follow-up OPCS care included the type of consultation with the OPCS that was allocated: home visit (yes=1/no=0), consultation at the PCS (yes=1/no=0) and telephone consultation (yes=1/no=0). This study only included follow-up provided by the OPCS.

*Adjusted urgency assessment* status included a measure indicating whether the triage nurse manually adjusted the urgency level following from the triage protocol (yes=1/no=0) to either a high-urgency or a low-urgency level. No information was available regarding the direction of adjusting.

### Independent measures

*SES of the patient* was operationalised as net disposable household income, standardised for household size and composition, derived from the SSD. The patient's income was categorised in quintiles ranging from 1 (low income) to 5 (high income), following from standardised percentiles according to the total Dutch population.

*Patient characteristics* included age (for age groups, see table 1), sex, living alone (yes/no) and non-Western migration status (yes/no).

## [Table 1]

*Degree of urbanisation of the patient's home address* was derived from population registry data[20] and dichotomised in low urbanisation level (<500 to 1000 addresses/km$^2$) and high urbanisation level (1000 to >2500 addresses/km$^2$).

## Statistical analyses

The characteristics of the sample were reported using descriptive statistics, comparing five income groups with the general population in the Netherlands. We compared income groups with regard to the mean number of OPCS contacts. Regarding the presented symptoms, we reported the 10 most frequently occurring symptoms from the list of 56 symptoms. For the five most frequently presented symptoms and having the presenting symptom not recorded, we assessed whether the proportion of presenting with each of these symptoms differed across income groups, compared with the total amount of presentations in telephone triage. For other urgency assessment and allocation of follow-up care, all triage contacts were included. Associations between presenting symptoms, urgency assessment, and allocated follow-up care and household income were analysed using multilevel logistic regression analyses, controlling for patient background characteristics. To account for

clustering of triage contacts within patients, a two-level mixed model was applied, including contacts on the first level and patients on the second level. Intraclass correlation coefficients (ICCs) were calculated to determine the explained residual variance attributable to the grouping level of the patient. In addition, age and sex standardised probabilities were calculated to report the extent of the differences according to household income. CIs were set at 95%, and analyses were conducted using Stata V.15.1.

## Results

The study population (n=1 310 684) is described in table 1. Compared with the general population, OPCS patients more often included the youngest and highest age groups, women and non-Western immigrants. The low-income groups were over-represented in the study population compared with the general population. The lower the income group, the higher the mean number of yearly OPCS contacts and the percentage of patients with more than one contact per year. In online supplemental table 2, the distribution of type of contacts and urgency by income group is depicted.

Table 2 shows that the order and type of the 10 most frequently derived symptoms from the patient's presentation in telephone triage were largely similar. The relative share of trauma in the distribution of symptoms was larger among the high-income groups. The 10 most frequent symptoms reported by the low-income group accounted for 44% of their presentations, whereas the 10 most frequent symptoms among high-income patients accounted for 53% of the total range of symptoms than presented by low-income patients. Non-recording of a symptom occurred more often for patients with low income.

Statistically significant but small income differences were observed in the urgency assessment for high-urgency contacts. High-income patients had a higher probability of receiving a high-urgency assessment after presenting with laceration/cuts (table 3). Low-income patients had a substantially higher probability of a high-urgency assessment after presenting with urinary tract symptoms. No distinct income differences were observed for the other symptoms. The ICC in tables 3 and 4 details the variation in the allocated follow-up care that could be explained by clustering of triage contacts within patients. An ICC below 0.4 reflects limited variation due to clustering.

### [Table 2]

For low-income patients, triage was followed up by a telephone consultation or home visit more often than for high-income patients. In contrast, a face-to- face consultation was more common among the high-income groups (table 4). When adjusted for patient characteristics and urgency assessment, these patterns persisted. The probability of an in-person OPCS consultation was more than a third higher for the high-income group compared with the low-income group. The probability of a home visit was more than twice as high for the low-income group compared with the high-income group. Regarding individual presenting symptoms, the probability to be followed up with a telephone consultation or consultation at the OPCS did not deviate much from the overall mean probability, except for home visits (online supplemental table 3). Patients with low income had a substantially higher probability of a home visit for trauma or injury than patients from the high-income group.

In table 4, we show whether the change of adjustment to the urgency assessment varied by a patient's income. For low-income patients, the triage nurse more often adjusted the assessment given in the triage support system. The differences between low-income and high-income patients were, however, small and were predominantly observed for high-urgency contacts.

## Discussion

### Summary

The aim of this study was to determine to what extent patients' SES was related to differences in the telephone triage process in OPCSs. Differences in assessed urgency according to SES, though statistically significant, were not clinically important. Little variation was observed in the type of symptoms presented, although symptoms were less often recorded in low-income groups. Whereas low-income patients more often presented with dyspnoea, high-income patients more often presented with traumas and injuries. For the allocation of follow-up care in OPCS, more pronounced variation by income was observed. Irrespective of the urgency level and patient characteristics, we observed a higher probability of telephone advice and home visits for low-income patients and a higher probability of an in-person consultation for high-income patients. The urgency assessment ensuing from the triage protocol was more often over-ruled by the triage nurse in low-income patients.

### Strengths and limitations

The large set of EHR data representative for the Dutch population was a particular strength of our study. However, some data limitations may have influenced the results. First, we could not include information about underlying morbidity as determined by previous clinical diagnosis. Although we therefore were unable to account for the generally worse health status of low SES at the onset of the triage process, this reflected the situation triage nurses contend with in everyday practice. The lack of information about the patient's background in the OPCS setting is an inherent challenge of triage practice. Second, we did not have access to the clinical diagnosis assessed in the follow-up contact, and therefore we were unable to assess the appropriateness of the allocated follow-up. Third, due to a lack of detailed follow-up information, we were unable to include follow-up care provided in other settings (eg, ambulance), which is likely to be socioeconomically differentiated as well. The higher probability of a telephone consultation for low-income groups may well have corresponded with a higher referral rate to an emergency ambulance within this group. Fourth, we were unable to determine whether (manually) over-ruling the urgency assessment following from the triage protocol resulted in upscaling or downscaling of the urgency.

### Comparison with existing literature

Our finding that patients' SES appeared a negligible factor in the assessed urgency does not correspond with findings from triage at the ED, where triaged urgency levels were higher among patients from deprived neighbourhoods.[21] Although the ED is part of the acute care system in the Netherlands as well, the patients generally have more severe health problems and are triaged physically instead of by phone. Moreover, before entering an ED, the majority is referred by a GP, who already performed the 'first triage'.

### [Table 3] [Table 4]

In a Wales-based study on a telephone triage service, lower SES was related to a higher probability of advice to seek emergency care or face-to-face care.[22] Similar to the Welsh study, we found a higher probability for home visits in low-SES patients.

These results suggest that health problems presented by patients with lower SES more likely required attention at home due to either an urgent medical situation or having difficulties arranging transport to the OPCS for problems that need timely follow-up. In contrast to this, low-income patients also had a higher probability of receiving telephone advice, which generally corresponds with low-urgency health problems.[4] This suggests that low-income groups were more prone to contact an

OPCS for health problems at both the low and high ends of the urgency spectrum. Alternatively, at the OPCS, low-income groups may have been less assertive in requesting a face-to-face consultation with a GP.

Socioeconomic differences in the telephone triage process, irrespective of the health status, may reflect systematic differences in the appraisal of the presenting problem according to patients' SES.[23] An explanation may be found in the generally lower levels of health literacy among low-SES groups,[15] which may influence triage conversation by, for example, inadequate communication about illness severity by the patient. In addition, language barriers in people with an immigrant background may play a role in communication difficulties during triage. Triage nurses may experience insecurity interpreting ambiguous information provided by patients with low health literacy or poor language proficiency[2 5 9] Such lack of clear information may be reflected by the higher proportion of low-income patients for whom (1) no symptoms were recorded during the triage process, but had follow-up care arranged and/or (2) the initial urgency assessment by the support system had to be adjusted according to the nurses.[5] Although inequalities and differences in health literacy levels between SES in the Netherlands exist, they are less pronounced than in some other European Union countries.[15] The generally worse underlying health status and higher prevalence of comorbidity of low-SES patients[14] may influence triage presentation, urgency assessment and allocation of follow-up care as well.[3] The triage nurse often cannot access the patient's health record to take the medical history into account.[6] Consequently, patients are assumed to be aware of the implications of their condition and to be capable of linking current symptoms to their medical history. However, being well-informed about their disease is particularly difficult for people with low SES.[15]

### Implications for research and practice

The observed differences in follow-up care at the OPCS were small; however, for the large numbers of annual contacts, small differences count up to considerable workload. Telephone triage is an important tool in efficient allocation of acute care and workload management, and plays a key role in the sustainability of Out-of-hours primary care.[1] Adequate allocation of follow-up care largely depends on the quality of the triage conversation.[3 22] Although our quantitative exploration provided useful leads concerning SES differences in the triage conversation and subsequent care allocation, the complexity of the conversation should be subjected to further study. Previous conversation research8 should be expanded to the role of SES and health literacy of the patient regarding the interaction with triage nurses and the triage outcome.

Although telephone triage is found to be fairly safe and NTS is validated regarding a basic set of questions,[8 13] a higher risk for unsafe triage has previously been found for patients with complex illness.[10 24] The SES differences observed in our study and previous studies[16 22] support the need for validation of Netherlands Triage Standard across different SES groups. Validation, however, is not a plea for a stricter triage protocol, such as the strongly protocolled Medical Priority Dispatch Systems.[25]

## Conclusion

Socioeconomic differences were observed in the frequency of manual adjustment of the advised urgency level following from the triage protocol and allocation of follow-up care. These differences suggest that patients' SES affects the quality of the patient–triage nurse interaction and application of the triage protocol. Further research should focus on opportunities to better tailor the triage process to socioeconomically vulnerable patients. Triage decision support protocols should be validated to assure the telephone triage process performs reliably across SES groups.

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**Contributors** TJ designed the study, performed the statistical analyses and wrote the manuscript. KH, RV, FS and AK supervised the study and statistical analyses, and adapted the manuscript. All authors read and approved the final manuscript.

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**Competing interests** None declared.

**Patient consent for publication** Not required.

**Ethics approval** This study does not fall within the scope of the Medical Research Involving Human Subjects Act and therefore does not require ethical approval. General practices and Primary Care Cooperatives that participate in Nivel Primary Care Database are contractually obliged to (1) inform their patients about their participation in Nivel Primary Care Database and (2) inform patients about the option to opt out if patients object to inclusion of their data in the database 42. Dutch law allows the use of electronic health record data for research purposes under certain conditions. According to Dutch legislation and under certain conditions, neither obtaining informed consent nor approval by a medical ethics committee is obligatory for this kind of observational studies (Dutch Civil Law (BW), Article 7:458, http://www. dutchcivillaw.com/ civilcodebook077. htm; Medical Research Involving Human Subject Act (WMO), http://www. ccmo.nl/ en/nonwmo- research; and General Data Protection Regulation (AVG) Article 24 (GDPR)). This study has been approved by the applicable governance bodies of Nivel Primary Care Database under No. NZR-00317.017.

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**Data availability statement** Data are available upon reasonable request. Data may be obtained from a third party and are not publicly available. Results are based on calculations by the researchers of this paper using non-public microdata from Statistics Netherlands. Under certain conditions, these microdata are accessible for statistical and scientific research. For further information: microdata@cbs.nl. The unpublished statistical code and raw data files excluding the microdata of Statistics Netherlands are available upon reasonable request from the authors.

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## Tables

*Table 1 Characteristics of the study population of OPCS patients, totals and according to household income group in 2017*

| | | Study population | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Household income group | | | | |
| | The Netherlands * | Total | 1 (low) | 2 | 3 | 4 | 5 (high) |
| Patients (n/%) | | 1 310 684 | 19.2 | 20.4 | 21.3 | 20.5 | 18.6 |
| Age (mean (SD)) | 41.6 | 39.2 (26.5) | 37.8 (26.7) | 46.2 (29.3) | 37.5 (26.6) | 36.4 (24.7) | 37.8 (23.4) |
| Age group (%) | | | | | | | |
| 0–4 years | 5.1 | 11.0 | 11.6 | 9.4 | 12.6 | 11.7 | 9.3 |
| 5–17 years | 14.8 | 16.4 | 16.5 | 14.4 | 18.0 | 17.2 | 15.8 |
| 18–44 years | 33.3 | 30.0 | 32.9 | 24.5 | 29.6 | 32.0 | 31.1 |
| 45–64 years | 28.2 | 21.2 | 19.4 | 14.8 | 18.7 | 23.2 | 30.5 |
| 65–74 years | 10.7 | 9.4 | 7.0 | 13.1 | 10.1 | 8.7 | 8.1 |
| ≥75 years | 7.8 | 12.1 | 12.6 | 23.8 | 11.0 | 17.4 | 5.2 |
| Sex (female) (%) | 50.4 | 53.7 | 57.8 | 56.8 | 52.5 | 51.3 | 50.1 |
| Living alone (yes) (%) | 17.3 | 15.9 | 29.2 | 23.6 | 12.5 | 8.5 | 5.9 |
| Non-Western immigrant status (yes) (%) | 12.7 | 23.2 | 41.8 | 24.0 | 19.4 | 16.2 | 15.5 |
| Urbanisation level home address (low urbanisation) | 34.6 | 30.2 | 20.2 | 28.4 | 33.2 | 34.4 | 34.1 |
| Number of OPCS contacts (mean (SD)) | | 1.6 (1.7) | 1.8 (2.5) | 1.7 (2.1) | 1.5 (1.3) | 1.4 (1.1) | 1.4 (1.0) |
| Patients with one contact with an OPCS in 2017 (%) | | 69.3 | 62.0 | 65.4 | 69.9 | 73.1 | 76.0 |
| Patients with two contacts with an OPCS in 2017 (%) | | 18.9 | 20.9 | 20.1 | 18.9 | 17.9 | 16.8 |
| Patients with three or more contacts with an OPCS in 2017 (%) | | 11.8 | 17.1 | 14.5 | 11.1 | 9.0 | 7.2 |

*Total population of the Netherlands in 2017: n=170 800 340, derived from Statistics Netherlands.[20]
OPCS, out-of-hours primary care service.

*Table 2 Top 10 most frequently presented symptoms in telephone triage, total contacts and contacts stratified to household income group in 2017 (n=2 336 814 triage contacts)*

| | | Income groups | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **%** | **1 (low)** | **%** | **2** | **%** | **3** | **%** | **4** | **%** | **5 (high)** | **%** |
| Most frequently presented symptoms | | | | | | | | | | | |
| 1: Trauma/extremity | 9.0 | 1: Trauma extremity | 6.9 | 1: Trauma extremity | 7.6 | 1: Trauma extremity | 9.6 | 1: Trauma extremity | 10.6 | 1: Trauma extremity | 10.9 |
| 2: Abdominal pain adult | 6.2 | 2: Abdominal pain adult | 6.6 | 2: Abdominal pain adult | 6.3 | 2: Laceration/cut | 6.3 | 2: Laceration/cut | 7.1 | 2: Laceration/cut | 7.8 |
| 3: Laceration/cut | 6.0 | 3: Dyspnoea | 4.9 | 3: Urinary tract problems | 5.2 | 3: Abdominal pain adult | 6.0 | 3: Abdominal pain adult | 6.0 | 3: Abdominal pain adult | 6.0 |
| 4: Urinary tract problems | 5.0 | 4: Laceration/cut | 4.6 | 4: Dyspnoea | 5.2 | 4: Skin problems/ mastitis | 5.1 | 4: Skin problems/ mastitis | 5.3 | 4: Urinary tract problems | 5.7 |
| 5: Skin problems/mastitis | 4.9 | 5: Skin problems/ mastitis | 4.5 | 5: Laceration/cut | 5.0 | 5: Urinary tract problems | 4.9 | 5: Urinary tract problems | 5.2 | 5: Skin problems/ mastitis | 5.5 |
| 6: Dyspnoea | 4.2 | 6: Thorax pain | 4.3 | 6: Thorax pain | 4.6 | 6: Dyspnoea | 4.2 | 6: Eye problems | 4.0 | 6: Eye problems | 4.7 |
| 7: Thorax pain | 4.1 | 7: Urinary tract problems | 4.1 | 7: Skin problems/ mastitis | 4.3 | 7: Thorax pain | 3.9 | 7: Thorax pain | 3.8 | 7: Thorax pain | 3.7 |
| 8: Eye problems | 3.4 | 8: Fever child | 3.1 | 8: Leg problems | 3.4 | 8: Eye problems | 3.4 | 8: Dyspnoea | 3.5 | 8: Dyspnoea | 3.1 |
| 9: Leg problems | 3.0 | 9: Leg problems | 2.7 | 9: Eye problems | 2.7 | 9: Fever child | 3.3 | 9: Ear problems | 3.2 | 9: Ear problems | 3.0 |
| 10: Ear problems | 2.9 | 10: Ear problems | 2.7 | 10: Fever child | 2.5 | 10: Ear problems | 3.2 | 10: Fever child | 3.0 | 10: Leg problems | 2.9 |
| Cumulative percentage of top 10 most frequently presented symptoms | 48.6 | | 44.4 | | 46.7 | | 49.9 | | 51.7 | | 53.0 |
| No symptom recorded | 11.7 | | 15.1 | | 12.9 | | 10.4 | | 9.6 | | 9.7 |

*Table 3 Standardised probability of high-urgency contacts with out-of-hours primary care services and associations with a patient's household income group for total contacts and contacts stratified to the five most frequently presented symptoms in 2017*

| | | | Five most frequently presented symptoms | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total number of triage contacts (n=2 334 598) | | Symptom not recorded (n=273 819) | | Trauma generalised/extremity (n=209 526) | | Laceration/cut (n=140 574) | | Abdominal pain adult (n=144 659) | | Urinary tract problems (n=115 889) | | Skin problem | |
| | Standardised probability (%) | OR (95% CI) | Standardised probability (%) | OR (95% CI) | Standardised probability (%) | OR (95% CI) | Standardised probability (%) | OR (95% CI) | Standardised probability (%) | OR (95% CI) | Standardised probability (%) | OR (95% CI) | Standardised probability (% |
| Household income | | | | | | | | | | | | | | |
| 1 (low) | 59.9 | 1.05 (1.04 to 1.06) | 28.7 | 1.14 (1.09 to 1.18) | 79.3 | 1.01 (0.97 to 1.05) | 72.7 | 0.89 (0.85 to 0.94) | 82.5 | 0.95 (0.90 to 1.00) | 47.8 | 1.58 (1.49 to 1.68) | 24.4 | |
| 2 | 60.6 | 1.07 (1.06 to 1.08) | 26.0 | 0.94 (0.90 to 0.97) | 78.9 | 1.03 (0.99 to 1.07) | 73.1 | 0.89 (0.85 to 0.93) | 83.0 | 0.93 (0.88 to 0.98) | 45.0 | 1.43 (1.35 to 1.51) | 24.0 | |
| 3 | 60.6 | 1.03 (1.0 to 1.04) | 25.7 | 0.93 (0.89 to 0.97) | 79.0 | 0.99 (0.96 to 1.03) | 73.9 | 0.92 (0.88 to 0.97) | 83.2 | 0.93 (0.88 to 0.98) | 43.2 | 1.23 (1.16 to 1.31) | 22.9 | |
| 4 | 60.4 | 1.01 (1.00 to 1.02) | 26.1 | 0.92 (0.88 to 096) | 79.5 | 0.99 (0.96 to 1.03) | 74.4 | 0.94 (0.90 to 0.98) | 83.1 | 0.92 (0.87 to 0.97) | 41.3 | 1.07 (1.01 to 1.14) | 23.3 | |
| 5 (high) | 60.4 | Ref. | 27.6 | Ref. | 79.8 | Ref. | 75.2 | Ref. | 83.7 | Ref. | 40.8 | Ref. | 23.0 | |
| Between-patient variance (ICC/SE) | | 0.16(0.001) | | 0.35 (0.01) | | 0.11 (0.01) | | 0.27 (0.02) | | 0.23 (0.01) | | 0.41(0.01) | | |

Standardised probability by direct standardisation for age and sex; ORs from multilevel logistic regression analyses; analyses adjusted for age groups, sex, living alone and non-Western immigrant status. ICC/SE: the relative contribution due to clustering of observations within patients to the variation unexpla to the contact level.
ICC/SE, intraclass correlation between patients and its standard error.

*Table 4 Standardised probability of follow-up contacts and adjusted urgency level in OPCSs after telephone triage, and associations with a patient's socioeconomic status stratified to follow-up type in 2017 (n=2 334 598 contacts)*

| | Triage contacts with follow-up OPCS | | | | | | Urgency following from protocol was adjusted by triage nurse | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Telephone consultation (yes=1/no=0) | | Consultation OPCS (yes=1/no=0) | | Home visit (yes=1/no=0) | | High-urgency contacts adjusted (yes=1/no=0) | | Low-urgency contacts adjusted (yes=1/no=0) | |
| | Standardised probability (%) | OR (95% CI) | Standardised probability (%) | OR (95% CI) | Standardised probability (%) | OR (95% CI) | Standardised probability (%) | OR (95% CI) | Standardised probability (%) | OR (95% CI) |
| Household income | | | | | | | | | | |
| 1 (low) | 42.1 | 1.20 (1.18 to 1.21) | 47.8 | 0.63 (0.62 to 0.64) | 10.2 | 2.29 (2.22 to 2.35) | 12.3 | 1.23 (1.21 to 1.26) | 15.6 | 1.19 (1.16 to 1.22) |
| 2 | 40.4 | 1.18 (1.16 to 1.19) | 50.8 | 0.65 (0.64 to 0.66) | 8.8 | 1.63 (1.59 to 1.68) | 10.6 | 1.05 (1.03 to 1.07) | 14.4 | 1.07 (1.04 to 1.09) |
| 3 | 39.2 | 1.09 (1.08 to 1.10) | 53.1 | 0.80 (0.79 to 0.81) | 7.7 | 1.31 (1.28 to 1.35) | 9.9 | 1.00 (0.98 to 1.02) | 13.9 | 1.04 (1.02 to 1.07) |
| 4 | 38.7 | 1.05 (1.04 to 1.06) | 54.2 | 0.89 (0.88 to 0.90) | 7.1 | 1.13 (1.10 to 1.17) | 9.9 | 1.01 (0.99 to 1.03) | 13.9 | 1.04 (1.02 to 1.07) |
| 5 (high) | 38.2 | Ref. | 55.0 | Ref. | 6.7 | Ref. | 9.9 | Ref. | 13.4 | Ref. |
| Between-patient variance (ICC/SE) | | 0.18 (0.001) | | 0.30 (0.002) | | 0.42 (0.003) | | 0.15 (0.004) | | 0.28 (0.004) |

Standardised probability by direct standardisation for age and sex; ORs from multilevel logistic regression analyses; analyses adjusted for age groups, sex, living alone, non-Western immigrant status and urgency assessment; ICC/SE: the relative contribution of clustering of observations within patients to the residual variance.

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