

# BMJ Open A comparison of calls subjected to a malpractice claim versus 'normal calls' within the Swedish Healthcare Direct: a case-control study

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**To cite:** Ernesäter A, Engström M, Winblad U, *et al.* A comparison of calls subjected to a malpractice claim versus 'normal calls' within the Swedish Healthcare Direct: a case-control study. *BMJ Open* 2014;**4**:e005961. doi:10.1136/bmjopen-2014-005961

► Prepublication history for this paper is available online. To view these files please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2014-005961>).

Received 23 June 2014  
Revised 14 August 2014  
Accepted 27 August 2014



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## ABSTRACT

**Objectives:** The purpose of this study is to compare communication patterns in calls subjected to a malpractice claim with matched controls.

**Setting:** In many countries, telephone advice nursing is patients' first contact with healthcare. Telenurses' assessment of callers' symptoms and needs are based on verbal communication only, and problems with over-triage and under-triage have been reported.

**Participants:** A total sample of all reported medical errors (n=33) during the period 2003–2010 within Swedish Healthcare Direct was retrieved. Corresponding calls were thereafter identified and collected as sound files from the manager in charge at the respective call centres. For technical reasons, calls from four of the cases were not possible to retrieve. For the present study, matched control calls (n=26) based on the patient's age, gender and main symptom presented by the caller were collected.

**Results:** Male patients were in majority (n=16), and the most common reasons for calling were abdominal pain (n=10) and chest pain (n=5). There were statistically significant differences between the communication in the cases and controls: telenurses used fewer open-ended medical questions ( $p<0.001$ ) in the cases compared to the control calls; callers provided telenurses with more medical information in the control calls compared to the cases ( $p=0.001$ ); and telenurses used more facilitation and patient activation activities in the control calls ( $p=0.034$ ), such as back-channel response ( $p=0.001$ ), compared to the cases.

**Conclusions:** The present study shows that telenurses in malpractice claimed calls used more closed-ended questioning compared to those in control calls, who used more open-ended questioning and back-channel response, which provided them with richer medical descriptions and more information from the caller. Hence, these communicative techniques are important in addition to solid medical and nursing competence and sound decision aid systems.

## INTRODUCTION

Telephone advice nursing plays a crucial role in healthcare organisations through the

## Strengths and limitations of this study

- This is the first study to compare authentic calls, subjected to malpractice claims, to matched controls for example, normal calls to Sweden's national telephone advice nursing service (Swedish Healthcare Direct).
- Open-ended medical questions and back-channel response for example, attentive listening from telenurses were more common in control calls, which indicate that these strategies might enhance patient safety in telephone advice nursing services.
- Using open-ended medical questions do not lengthen call-time.
- The present study includes a small sample of calls (n=52), in a Swedish context. However, it consisted of a total sample of authentic malpractice claimed calls during the time period, and matched controls.

assessment of callers' symptoms and the steering of patient flows to the right level of care. These services are complex, and some studies have shown that they may compromise patient safety.<sup>1 2</sup> The American Academy of Ambulatory Care Nursing (AAACN; 2007) has defined telephone advice nursing as:

Telephone advice nursing, or in short 'telenursing' including telephone triage, is defined as the practice of providing 'a component of telephone nursing practice that focuses on assessment, prioritization, and referral to the appropriate levels of care' and 'identifying the nature and urgency' of a caller's or patient's needs.

Telephone advice nursing, in Sweden performed solely by registered nurses (RNs), here referred to as telenurses, has been described as the most vulnerable form of out-of-hours healthcare.<sup>3–6</sup> However, it should be noted that the competence and education in telenursing differ between

countries. In UK, for instance, caller first have to talk to a so called call-handler, how then might transfer the call to a RN, if deemed appropriate. Among the problems with the service, over-triage and under-triage have been described in several international studies.<sup>2 7-9</sup> A systematic review<sup>10</sup> showed that as much as 10% of telephone advice was unsafe. The studies included in the review that had used simulated patients showed that an average of 50% of the contacts was unsafe. In many countries telephone advice nursing is the patient's first contact with healthcare, and the service entails a large number of patient contacts.<sup>11-13</sup> Given this large number, the effects of unsafe telephone advice nursing could be substantial on a population level.<sup>10</sup>

Telephone advice nursing is a growing service in many countries (the UK, the US, Canada, Sweden, Denmark and the Netherlands), with the aim to provide increased accessibility to qualified healthcare advice and to rationalise limited healthcare resources. The service in Sweden, called Swedish Healthcare Direct (SHD), is staffed by RNs who independently triage callers' need of care, give self-care advice and/or refer the caller to an appropriate level of care, with the assistance of a computerised decision support system (CDSS).<sup>14 15</sup> The CDSS used in Sweden could be entered either by symptom or by diagnosis, covering various symptoms and conditions among children, adolescents, adults and older people. It suggests key-questions based on the caller's symptom, and severe main symptoms are regarded as acute until proven not, for example, chest-pain. The recommendation levels within the CDSS vary from ambulance dispatch to self-care advice.<sup>16</sup> The CDSS used in Sweden is constantly revised by medical experts and the users (telenurses) have the possibility to report problems with the CDSS to the system developers. The outcome of telenurses triage of callers has in international studies varied from 58% accuracy<sup>1</sup> to 97.6%.<sup>16</sup> There is however, also another factor to consider in addition to the accuracy of the CDSS, namely the human factor. No matter how accurate the CDSS is if the users do not use the system as intended. Several studies<sup>17-20</sup> have described both how telenurses in Sweden<sup>17</sup> as well as in the UK<sup>18 19</sup> stated that they did not always use the CDSS as intended. As their knowledge about the CDSS increase, they are able to select the 'proper' main symptom to enter, enabling them to choose a route through the software that matches their own understanding of the symptoms and its cause, hence using the CDSS to confirm their decisions rather than excluding severe symptoms.<sup>18</sup> In our previous study of malpractice claimed calls,<sup>21</sup> the root-cause analysis performed by the National Board of Health and Welfare (NBHW), showed that the most common reasons (please note that more than one reason could be identified for the same case) for the malpractice claims were communication failure (n=35). These communicative failures consisted of: failure to listen to the caller (n=12), communication failure (n=11) and telenurses asking the caller too few

questions (n=10). The investigation also showed how telenurses in seven cases failed to follow the guidelines of the CDSS, or did not use the CDSS at all. The NBHW's investigations also showed how deficiency in the CDSS (n=5) contributed to the cases.<sup>21</sup>

The service in Sweden is provided by 33 call centres,<sup>22</sup> located all over the country and connected through a network which provides, for example, CDSS and in-house education. Currently 1100 telenurses are employed in this service, which handled over five million calls in 2013.<sup>23</sup> They are subjected to many challenging demands, including employers' demands for efficiency<sup>14</sup> in addition to the correct and accurate triaging of callers' need of care. Communication is hence essential in telephone advice nursing. Not only do telenurses need to ask accurate questions; they also need to use active listening and, through their communication, create a trusting and caring relationship with the caller.<sup>24-26</sup> These are factors that have been shown to correlate with positive health effects.<sup>27</sup> To sum up, the telenurses have a demanding job, as they are expected to provide expert, individualised care based solely on verbal communication, while also acting as gatekeepers for the healthcare sector.<sup>25</sup> Their professional practice includes great risks of making the wrong assessments, and subsequently be subjected to malpractice claims.

We have previously investigated malpractice claimed calls in SHD.<sup>21</sup> When a patient in Sweden is exposed to, or subjected to a medical error, a malpractice claim is filed with the NBHW, by the healthcare provider or the patient. A medical error can be defined as 'the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim'.<sup>28</sup> In an investigation of reported malpractice claimed calls (n=33) in the context of telephone advice nursing in Sweden,<sup>21</sup> communication failure was found to be the most common reason for these errors, as described above. The outcome for these malpractice claims was severe; 13 of the patients died and 12 were admitted to intensive care unit. The study showed that communication problems (n=35) was the most commonly described reason for the errors to occur, according what to the NBHW's investigation. Hence, the telenurses in these calls asked the callers too few questions and failed to listen to them. Safety risks in telephone advice nursing might be related to gathering partial information from callers, communicating with callers with language problems, or callers behaving in a way that hinders communication (such as being very angry); but the greatest risk seemed to be uncertainty due to the inability to see the caller in person.<sup>29</sup> Another safety risk within telephone advice nursing is not talking directly with the patient in need of care.<sup>21</sup> Secondhand communication has also been shown to contribute to increased safety risks in the context of emergency dispatch calls.<sup>30</sup>

Fernald *et al*<sup>31</sup> have shown that as much as 70% of all medical errors within primary healthcare are related to communication problems. Communication failure has

also been shown to be the most common reason for patient safety risks, as well as the most common cause of adverse events.<sup>21 32–35</sup> This likely also holds true for telephone advice nursing services, in which the assessment of healthcare needs is based solely on verbal communication. When searching the literature, there are no descriptions found of how communication in telephone advice nursing should be conducted to achieve safe communication, and what communicative patterns characterised safe and more unsafe calls. We believe that the potential differences found when calls subjected to a malpractice claim are compared to matched controls might shed light on both safe and unsafe communication practices via telephone.

The aim of the present study was to compare communication patterns in calls subjected to a malpractice claim with matched controls.

## METHODS

### Design

The study used a case–control design.

### Sample

A total sample of all reported medical errors (n=33) during the period 2003–2010 within SHD was retrieved as text documents from the NBHW, responsible for such investigations. Corresponding calls were thereafter identified and collected as sound files from the manager in charge at the respective call centres. In Sweden, all calls to SHD are recorded and stored as a sound file in a call data base, connected to the patient record for a minimum of 10 years. The managers in charge are responsible for these stored calls. For technical reasons, calls from four of the cases were not possible to retrieve. The 29 retrieved cases' calls were analysed, with the aim to describe all malpractice claims regarding SHD during 2003–2010, regarding the communication between telenurses and callers. These results are presented elsewhere.<sup>21</sup> For the present study, matched control calls based on the patient's age, gender and main symptom presented by the caller were collected from the call databases at SHD, by the managers in charge, as the researchers were not allowed direct access to the database due to ethical regulations. The control calls sound files were sent to the researchers via USB memory in registered letters. For three of the cases, it was not possible for the respective managers in charge to find matched controls in their call database, despite the large numbers of calls made to SHD every year. Several reminders were sent to the managers in charge in an attempt to retrieve control calls. The three cases which the managers were unable to find controls to were excluded from the present study. Hence, the present study consists of 26 cases and 26 matched controls, making a total of 52 calls. The cases and controls were spread over a period of time from the introduction of SHD in 2003 until 2010 and fielded by different telenurses. The 26 cases and 26 matched

controls each contained 16 male and 10 female patients. Patient age varied from 2 to 85 years; mean age 44 years, SD 23.7. The most common reasons for calling were abdominal pain (n=10), chest pain (n=5), dizziness (n=3) and breathing problems (n=2).

### Data analysis

All authentic calls were analysed using the Roter Interaction Analysis System (RIAS),<sup>36</sup> a commonly used instrument for describing provider–patient communication in various medical contexts. In RIAS coding, all communication between the telenurses and the caller is divided into small units defined as 'utterances', for example, the smallest speech segment to which a classification can be assigned. Coding is performed directly from sound files. During analysis, the authentic communication between telenurses and callers was coded as frequency of utterances and of statements, and as a proportion of statements in a given category relative to all nurse/caller statements during the call. Each single utterance is later categorised into one of the 41 exhaustive and exclusive RIAS categories. The categories are combined into composite categories according to the developers of the RIAS.<sup>36</sup> In the previous study of the malpractice claimed calls,<sup>21</sup> we have focused the result on 11 of the 41 categories, identifying patient-centred behaviour such as telenurses usage of open-ended questions and follow-up on callers understanding according guidelines.<sup>37–39</sup> Several of the categories were not present in the calls, probably explained by the context of the study. Analysis began with listening to the calls in order to attain an understanding of them. Calls were then analysed based on the recommendations of the RIAS manual,<sup>36</sup> and utterances were identified and placed into one of the categories, see tables 1 and 2. The control calls were analysed during autumn 2013. All coding was conducted by the first author (AE) while the last author (IKH) double coded 18 calls. Inter-rater reliability calculation, using intraclass correlation (ICC), ranged from 0.76 to 0.91. Both coders are trained in RIAS coding and are experienced telenurses. Data were imported into IBM SPSS Statistics V.20 for statistical analysis. Differences in communication between cases and matched controls were compared using the Wilcoxon Signed Rank Test.<sup>40</sup> To control/adjust for differences in call length between the cases and matched controls, utterances in a category are presented as percentage of total utterances (ie, utterances in the category divided by all utterances made by the caller or telenurses). Comparison between cases and matched controls was performed in all RIAS categories (n=49) and composite categories (n=13). Bonferroni adjustment was used with an adjusted p value of 0.001 for all statistical tests to control for type-I error.<sup>41</sup>

## RESULTS

Call length varied from 1 min 50 s to 20 min 10 s (mean 5 min 50 s) for the cases, and from 59 s to 20 min 44 s (mean 5 min 30 s) for the controls; p=0.377 (paired t

**Table 1** Comparison of telenurses' communication in the group cases versus control, presented as percentage of total utterances

Nurse talk Composite category/category	Case n=26 Mean (SD)	Control n=26 Mean (SD)	p Value*
Data gathering—biomedical	17.5 (10.2)	24.7 (10.6)	0.032
a) Closed—medical question	9.5 (5.5)	12.8 (7.8)	0.112
b) Closed—therapeutic question	2.3 (3.0)	0.9 (1.9)	0.058
c) Closed—other question	2.3 (2.5)	0.5 (0.3)	<b>0.001</b>
d) Open—medical question	2.6 (3.0)	9.6 (4.5)	<b>0.001</b>
e) Open—therapeutic question	0.2 (0.6)	0.9 (1.3)	0.013
f) Open—other question	0.2 (0.6)	0.4 (0.7)	0.575
g) Bid for repetition	0.3 (0.7)	0.1 (0.5)	0.225
Facilitation and patient activation	25.8 (11.7)	35.3 (11.4)	0.003
a) Ask for opinion	1.1 (1.5)	0.3 (0.7)	0.034
b) Ask for permission	0.3 (0.8)	0.08 (0.04)	0.225
c) Ask for reassurance	0	0	1.0
d) Ask for callers understanding	0.4 (1.7)	0.3 (0.8)	0.575
e) Back-channel	15.9 (10.1)	28.8 (11.3)	<b>0.001</b>
f) Check own understanding	8.1 (5.1)	1.9 (2.6)	<b>0.001</b>
Rapport-building/positive	16.5 (7.8)	14.7 (8.6)	0.341
a) Laugh	0.1 (0.5)	1.1 (3.6)	0.116
b) Express Approval	0.7 (1.1)	0.5 (1.1)	0.470
c) Give Compliments	0	0	1.0
d) Agree	15.6 (7.6)	2.4 (3.9)	<b>0.001</b>
Rapport-building/positive	6.0 (6.1)	2.9 (3.3)	0.024
a) Express empathy	0.5 (0.9)	0.8 (1.3)	0.433
b) Legitimise	0.6 (1.4)	0.2 (0.6)	0.161
c) Express concern	0.3 (0.8)	0.9 (1.2)	0.030
d) Reassures	4.3 (5.7)	1.0 (2.2)	0.010
e) Make partnership statement	0.3 (0.8)	0	0.109
f) Self-disclosure	0.02 (0.1)	0	0.317

\*The Wilcoxon Signed Rank Test was used to compare the groups. All categories in the RIAs were compared; however, in the table only composite categories including statistically significant results ( $p \leq 0.001$ ) and composite categories with a tendency toward significance ( $p = 0.01$ ) are presented. Statistically significant values are marked with bold text.

test). All calls, both cases and controls, were slightly provider-driven, with a ratio of telenurse/caller talk of 1.31 (SD 0.24) in the cases, versus a ratio of 1.28 (SD 0.30) in the controls ( $p = 0.424$ ).

Analysis of actual communication showed how telenurses asked more *open-ended medical questions* in the control calls (mean 9.6, SD 4.5) than in the case calls (mean 2.6, SD 3.0),  $p < 0.001$ . The use of *back-channel*

**Table 2** Comparison of callers' communication in the group cases versus control, presented as percentage of total utterances

Caller talk Composite category/category	Case n=26 Mean (SD)	Control n=26 Mean (SD)	p Value*
Information giving—biomedical	47.4 (16.6)	60.7 (13.7)	0.003
a) Give medical information	38.9 (13.4)	54.9 (13.2)	<b>0.001</b>
b) Give therapeutic information	5.9 (7.4)	4.4 (6.9)	0.478
c) Give other information	3.7 (3.6)	1.4 (2.1)	0.006
Information giving—lifestyle/psychological	6.0 (6.1)	2.0 (3.7)	0.002
a) Give information—lifestyle	5.6 (5.4)	1.4 (3.6)	<b>0.001</b>
b) Give information—psychological	0.4 (1.4)	0.6 (1.2)	0.401
Rapport-building/emotional	6.3 (4.6)	3.7 (4.3)	0.058
a) Express empathy	0.6 (0.3)	0	0.317
b) Legitimise	0	0	1.0
c) Express concern	6.0 (4.5)	3.7 (4.3)	0.071
d) Reassure	0.2 (0.9)	0	0.180

\*The Wilcoxon Signed Rank Test was used to compare the groups. All categories in the RIAs were compared; however, in the table only composite categories including statistically significant results ( $p \leq 0.001$ ) are presented, and the category Rapport-building/emotional was of interest based on a previous study. Statistically significant values are marked with bold text.

response for example, indicator or sustained interest, attentive listening or encouragement emitted by the telenurses when not holding the speaking floor (Mmmm-huh; yeah; go on) by telenurses was also significantly more common in the controls (mean 28.8, SD 11.3) than in the cases (mean 15.9, SD 10.1;  $p=0.001$ ); see table 1. When analysing the callers' communication, the analysis showed that callers provided statistically significantly more *medical information* (mean 54.9, SD 13.2) in the controls than in the cases (mean 38.9, SD 13.4),  $p=0.001$ , and that callers in the cases gave more lifestyle information (mean 5.6, SD 5.4) than those in the controls (1.4, SD 3.6),  $p=0.001$ ; see table 2.

In the cases, telenurses were significantly more prone to *check their own understanding* (mean 8.1, SD 5.1) than in the controls (mean 1.9, SD 2.6);  $p<0.001$ . Checking for one's own understanding involves utterances like 'Did you say the chest pain started while walking in stairs?' Furthermore, communication analysis also showed that telenurses made more *statements of agreement* in the cases (mean 15.6, SD 7.6) than in the controls (mean 2.4, SD 3.9)  $p<0.001$ . Typical examples of *statements of agreement* are 'You're probably right; there's nothing to worry about'. Telenurses were reluctant to follow-up on callers understanding to given advice (*ask for callers understanding*) in both cases (mean 0.4, SD 1.7) as well as in controls (mean 0.3 SD 0.8).

## DISCUSSION

The present comparison of malpractice claimed calls in the context of SHD versus matched controls showed that the telenurses in the control calls used more open-ended questions and back-channel response, and were hence provided with more medical information by the callers than were the telenurses in the cases. These results show that the use of open-ended questions and back-channel response by telenurses seems to encourage callers to freely narrate their problem and reason for calling. This is in line with previous studies in other contexts<sup>42-44</sup> showing that the use of open-ended questions might contribute to improved patient safety and reduce patient complaints.<sup>45</sup> Interestingly, the use of open-ended questions did not increase the total time of the calls, as is also shown by Stewart *et al.*<sup>46</sup> However, using open-ended questions significantly increased the amount of medical information the callers provided the telenurses with. This likely contributes to increased safety, since it gives telenurses a better base for their decisions.<sup>32 47 48</sup> Telephone triage and counselling is complicated and perhaps the most vulnerable part of nursing and out-of-hours care.<sup>3 5 11 25</sup> Telephone nursing is by Greenberg<sup>13</sup> describes as a dynamic and goal-oriented process consisting of gathering information, cognitive processing and output. Greenberg suggests that telenurses training and practice should emphasise telenurses information gathering, enabling telenurses to use this information, both implicit and explicit information, to identify client needs. And as shown in the previous study,

usage of open-ended questions might increase the information callers provide to telenurses. Hence, this could be seen as a way of safety-netting. Healthcare professionals' use of open-ended questioning is also a cornerstone in patient-centred communication. Typical of biomedical communication, on the other hand, is the use of closed-ended questions and giving instructions without following up on the patient's understanding.<sup>49</sup> This communication pattern was found in the present malpractice claimed cases. Neither in the cases nor the control calls the telenurses followed up on callers understanding to given advice (*ask for callers understanding*). This lack of follow-up on callers understanding to advice given should be regarded as a clear threat to patient safety since it does not matter how correct the telenurses advices are if the caller do not understand what to do. A Norwegian study has shown how 99 out of 100 callers stated that they had understood the telenurses advice, but when comparing to the telephone records, the observed agreement was 82.6%.<sup>50</sup> As suggested by Hansen and Hunskaar<sup>50</sup> telenurses should ask callers to repeat the advices at the end of the call in order to ensure callers understanding. This is also a way of safety-netting. Using safety net instruction has shown to be an important factor for quality of communication in telephone advice nursing.<sup>51</sup> As suggested by Derkx *et al.*<sup>52</sup> training for telenurses should focus more on patient-centred communication with active listening, active advising and telenurses structuring the call.

Expressions of concern were quite common among callers in both the cases (mean 6.0, SD 4.5) and the controls (mean 3.7, SD 4.3)  $p=0.071$ , although we had expected there to be more expressions of concern among the cases. Price's<sup>32</sup> study in a paediatric setting suggests that it is important that parents' concern is taken seriously, since they are often good judges of their child's condition. Hence, taking an adequate history and listening to the patient's story are again all-important issues.<sup>32</sup> Studies<sup>26 50</sup> has shown that callers have a great credence in telenurses advices, and despite not feeling quite confident regarding the advice, the callers followed them.<sup>50</sup> Hence, telenurses authority could in a way be regarded as a threat to patient safety. However, in contradiction to this telenurses has also described how they sometimes actually *expected* the callers to make the final decision regarding given advice. Situations leading to a malpractice claims were described as when callers were advised to contact emergency services if they felt their conditions had worsened and not heeded this advice,<sup>53</sup> as they might for instance not know what signs and symptoms that indicated worsening. Since telenurses have a huge responsibility for the caller and a large impact on caller care-seeking behaviour it is outmost important that telenurses possess both good communicative and medical skills in order to meet the caller's needs, and clarify and motivate the advice. It is therefore important for telenurses to obtain feedback on their triage to improve accuracy.<sup>54</sup> In Norway, telenurses both assess patients by telephone and actually



meet them when they attend the clinic, and this way of organising the care may contribute to improved feedback and learning for telenurses.<sup>54</sup> In Sweden however, telenurses work in call-centres with no face-to-face contact with callers/patients and are not given this opportunity for feedback on their assessments. In a recent study<sup>53</sup> telenurses were interviewed regarding their own experiences of factors which may have contributed to the malpractice claims. The study describes the importance of experience and how inexperience, as a telenurses, contributed to the malpractice claims. Today there is no specialist education for telenurses in Sweden, but the need of such has been raised in previous studies.<sup>24 29 55</sup>

Among the control calls, telenurses were more prone to use *Facilitation and patient activation* ( $p=0.003$ ), see table 1, which include asking for callers opinion, understanding to advice given and using back-channel response to show interest in what the caller is saying. A Dutch study<sup>52</sup> suggests that telenurses should use these communicative strategies to improve the quality of communication. The use of patient activation strategies has also been shown to increase concordance.<sup>56</sup> Achieving concordance is essential for callers to follow through with the advice provided by the telenurses.<sup>26</sup> This finding is puzzling—that is, why do the telenurses in the cases use less patient activating strategies?—and needs to be investigated in further studies.

In the calls subjected to malpractice claims, telenurses in the cases checked their own understanding more often than those in the controls, with questions like ‘So you’ve had this chest pain for five hours?’ These results could be signs of insecurity or the result of a conscious strategy to assure correctness? Further analysis using an in-depth qualitative analysis of this data is necessary to answer this question.

Interestingly, there were no significant differences between the cases (mean 1.2, SD 2.8) and the controls (mean 0.7, SD 1.8)  $p=0.515$  regarding callers’ requests for service, for example, referral to a doctor. These results show that callers in the cases might not have been aware of the severity of their medical condition. In the cases, there was a tendency of significance regarding telenurses’ expressions of reassurance (mean 4.3, SD 5.7) compared to the controls (mean 1.0, SD. 2.2),  $p=0.01$ . In a previous study<sup>21</sup> analysing communication in the malpractice claimed calls, there was a significant relationship between callers’ expressions of concern and telenurses’ utterances of reassurance during calls.

The findings from the present study might be used for educational interventions in clinical settings, as well as for in-house training for telenurses. However, in addition to the present RIAS analysis,<sup>36</sup> more in-depth qualitative analyses—of for instance turn-taking and nurses’ responses to callers’ cues—should be valuable. Further research on larger samples might include studies of well-functioning calls and the communication patterns in them.

## LIMITATIONS

The present study includes a small sample of calls, in a Swedish context. However, it consisted of a total sample of authentic malpractice claimed calls during the time period, and matched controls. Many cases with errors do not end up as malpractice cases and might thereby not be included in the study. However, due to Swedish regulations, it was not possible to control for the outcome of the control calls, control calls might contain unknown errors. Also due to Swedish regulations, managers in charge at SHD are responsible for the recorded calls, and despite several reminders sent from the research group, it was not possible to retrieve control call for three of the cases. The RIAS coding of the calls was conducted by trained coders, the first and last author, both RN’s with previous experience of telephone advice nursing. Eighteen of the 52 calls were double coded to assure inter-rater reliability and ICC ranged from 0.76 to 0.91.

## CONCLUSIONS

The present study shows that telenurses in malpractice claimed calls used more closed-ended questioning compared to those in control calls, who used more open-ended questioning and back-channel response, which provided them with richer medical descriptions and more information from the caller. Hence, using open-ended questions and telenurses encouraging callers to freely describe their problems and reason for calling should be taught and used in clinical practice. These communicative techniques seems important in addition to solid medical and nursing competence and sound decision aid systems. Further studies including telenurses subjected to a malpractice claim, using qualitative methods might deepen the understanding of why telenurses were prone to use close-ended questions.

**Acknowledgements** The authors would like to acknowledge all managers in charge whom contributed to data collection.

**Contributors** AE contributed to planning and designing study, data collection, data analysis and drafting of manuscript. ME contributed to planning and designing study, data analysis and drafting of manuscript. UW contributed to planning and designing study and drafting of manuscript. IKH contributed to planning and designing study, data analysis and drafting of manuscript.

**Competing interests** None.

**Ethics approval** The study was approved by the Regional Ethical Review Board in Uppsala (na.2010/008) and the Swedish National Board of Health and Welfare (NBHW) (act number 3.1 35689/2010)

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data sharing statement** No additional data are available

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