Predictors of healthcare professionals’ attitudes towards family involvement in safety-relevant behaviours: a cross-sectional factorial survey study

Rachel Davis,1 M Savvopoulou,1 R Shergill,2 S Shergill,3 D Schwappach4,5

ABSTRACT

Objectives: To investigate predictors of healthcare professionals’ (HCPs) attitudes towards family involvement in safety-relevant behaviours.

Design: A cross-sectional fractional factorial survey that assessed HCPs’ attitudes towards family involvement in two error scenarios relating to hand hygiene and medication safety. Each survey comprised two randomised vignettes that described the potential error, how the family member communicated with the HCP about the error and how the HCP responded to the family member’s question.

Setting: 5 teaching hospitals in London, the Midlands and York. HCPs were approached on a range of medical and surgical wards.

Participants: 160 HCPs (73 doctors; 87 nurses) aged between 21 and 65 years (mean 37) 102 were female.

Outcome measures: HCP approval of family member’s behaviour; HCP reaction to the family member; anticipated effects on the family member–HCP relationship; HCP support for being questioned about hand hygiene/medication; affective rating responses.

Results: HCPs supported family member’s intervening (88%) but only 41% agreed this would have positive effects on the family member/HCP relationship. Across vignettes and error scenarios the strongest predictors of attitudes were how the HCP (in the scenario) responded to the family member and whether an error actually occurred. Doctors (vs nurses) provided systematically more positive affective ratings to the vignettes.

Conclusions: Important predictors of HCPs’ attitudes towards family members’ involvement in patient safety have been highlighted. In particular, a discouraging response from HCP’s decreased support for family members being involved and had strong perceived negative effects on the family member/HCP relationship.

INTRODUCTION

Improving patient safety is an international priority in healthcare.1–5 Traditionally efforts to reduce preventable harm have targeted the practices and systems within healthcare organisations and the skills and behaviour of those delivering clinical care. More recently though, the contributions that patients can make to their safety have been highlighted,4–7 with the last decade in particular seeing a surge of interest in this area.6–8 There are numerous opportunities throughout the care pathway for patients to help reduce their risk of healthcare harm.4–9 10 Monitoring and questioning the safety practice of healthcare professionals (HCPs) is one area in particular that holds promise.11 Patients have been shown to flag up safety problems (eg, being given the wrong medication) that may otherwise go unnoticed12 meaning that prompt action can then be taken to mitigate (potential) adverse effects.

In addition to the patient themselves, the role of family members in monitoring safe practice can be equally important. In settings where patients are especially vulnerable and unable to look after themselves (eg,
paediatrics and care of the elderly) families are often the patients’ primary source of strength and support, thus their role in ensuring safety takes on a particularly important role. Despite the important contributions that family members could make, it is currently not clear what their attitudes towards involvement would be and/or their willingness to voice any safety-related concerns. However, drawing from the wider literature on patients themselves, evidence strongly suggests patients find it harder to ask questions that could be perceived as challenging the clinical abilities of HCPs (eg, ‘Have you washed your hands?’) than those related to more general aspects of their recovery (‘How long will I be in hospital for?’). Fear of reprisal, being uncomfortable/anxious about asking, undermining HCPs’ clinical abilities and adversely affecting the HCP–patient relationship are key reasons for patients’ reluctance to participate. To improve participatory levels research has shown that by HCPs giving patients encouragement to ‘speak-up’ about safety-related issues, a significant positive impact on their willingness to be involved can be observed. It is likely (but yet to be empirically explored) that HCP encouragement could pose analogous effects on family members’ willingness to ask safety-related questions. To date however, the extent to which HCPs would support such questioning from patient’s families is unknown. Gaining this understanding could be critical to the successful engagement of families in promoting safety and could help to explain why HCPs may support such involvement in some situations but not others.

In previous research we conducted in Switzerland and the UK we used vignettes to explore HCPs’ attitudes towards patient involvement in two different error scenarios: poor hand hygiene of the HCP and incorrect medication for the patient. We found that several factors influenced HCPs’ level of support for being questioned by patients. Most notably, HCPs viewed patient involvement more favourably if the error described in the scenario actually occurred (ie, the HCP had not cleaned their hands before treating the patient), if the patient posed the question in a polite versus challenging way and if the HCP responded in a helpful and reassuring manner (ie, the HCP apologised and cleaned their hands). In the present paper we aim to build on our previous research and to address the apparent gap in the evidence-base by examining HCPs’ attitudes towards family involvement in safety. Our specific research question was: what are the predictors of doctors’ and nurses’ attitudes towards family members questioning HCPs: (1) about the HCPs’ hand hygiene (HH), and (2) about the patient’s medication?

### METHODS

#### Design

A cross-sectional factorial survey containing vignettes was employed. The survey is an adaption of a survey previously developed and applied by the authors. In total 8 different surveys were used, each of which comprised vignettes on two types of potential errors; a possible medication error and potentially missed hand disinfection. Each vignette consisted of 7 dichotomous variables (factors) each with two levels that were chosen in accordance with previous research and a priori hypotheses. Three factors in the vignettes related to the family member (relation to the patient (eg, parent, child), sex and the way in which they questioned the HCP in the scenario), two related to the HCP (occupation and reaction to the family member’s question) and two were error-related (correct/false attribution of error and if the error was witnessed by another HCP). The seven variables generated 128 possible combinations. Using experimental design software this was reduced to 8 combinations of random pairings of the two clinical scenarios in a fractional main effects design (see table 1 for examples of vignettes).

### Measures

A 22-item survey was developed to assess HCPs’ attitudes towards family involvement in two different error scenarios, one relating to the hand hygiene of the HCP and the other relating to the patient’s medication (11 items on each). Eight items (4 on each error scenario) assessed HCPs’ level of agreement with 4 attitudinal statements about the scenario: (1) I approve of the family member’s behaviour; (2) the HCP responded in the right manner; (3) the situation would have predominantly positive effects on the family member–HCP relationship and (4) I would as an HCP support the family member in asking me about my hand hygiene/the patient’s medication. A 7-point Likert response scale was used ranging from ‘strongly disagree’ to ‘strongly agree’ (higher scores indicating more favourable responses).

Fourteen items (7 on each scenario) explored HCPs’ ‘affective’ ratings of the family member intervening (ie, how they would feel if they were in the situation described in the scenario and were questioned by a patient’s family member). HCPs were asked: “If you were the HCP, how would the described situation be for you?” Responses were presented as 7 semantic differentials: (1) bad—good; (2) difficult—easy; (3) confrontational—not confrontational at all; (4) uncomfortable—comfortable; (5) not helpful at all—very helpful; (6) very embarrassing—not embarrassing at all; (7) very challenging—not challenging at all. A 7-point response scale was used with the semantic differentials serving as anchor labels (higher scores indicating more favourable responses).

Prior to data collection the survey was tested on 20 HCPs (12 doctors and 8 nurses) and minor iterations were made to ensure face validity and comprehension of survey items.

### Participants

Data were collected from doctors and nurses from general medical and surgical wards at five hospitals in...
London (N=3), Leicester (N=1) and York (N=1) between October 2013 and March 2014. HCPs were purposively sampled and approached face-to-face in the hospital wards, provided with an explanation of the study and asked for their consent to participate.

Data analysis

Data were analysed using STATA V.13. Mean scores for survey items were compared according to the error scenario and vignettes attributes. Significant differences were analysed using t tests. Scale reliability was computed (Cronbach’s α) for the affective rating items for each error scenario (N=7) and the mean scale score was calculated. Multiple regression analyses were performed to examine the effect of vignette attributes and participants’ characteristics (entered as predictor variables) on attitudes towards family member’s involvement. Sample size was calculated based on recommendations for the use of regression analysis in behavioural research.27 28

Five regression models were conducted for each error scenario (10 in total) relating to each of our key outcome measures: (1) approval of family member’s behaviour; (2) approval of HCP’s response to the family member; (3) support for being asked as an HCP; (4) positive effects on the family member–HCP relationship, and (5) the overall mean affective rating score. Chow tests were performed to test if the coefficients in the regression models for the medication error and hand hygiene scenarios were significantly different or whether the models could be pooled. Data were screened and to ensure parametric assumptions were met. All tests were two-sided. We considered p<0.05 to be significant.

RESULTS

Participant characteristics

In total, 209 HCPs were approached and 160 HCP completed the survey (77% response rate). Seventy-three (46%) were doctors, and 87 (54%) were nurses, aged between 21 and 65 years (mean=37 years; SD=10.4). One hundred and two (64%) responders were women. Participants had on average 11 years of professional experience (SD=10 years). HCPs who declined participation did so because they said they were too busy (N=40) or did not want to take part in the study (N=9).

Findings in relation to error frame

Across all scenarios, HCPs were supportive of the family member intervening (ie, questioning the HCP; mean approval score=5.8, CI 5.6 to 5.9). However, only 41%
agreed that such behaviour would have positive effects on the family member–HCP relationship (responders with ratings >4). There were no significant differences in HCPs’ responses to family members intervening in the medication error frame compared to the hand hygiene frame (table 2).

Affecting ratings scores

There was high internal consistency between HCPs’ affective ratings scores (Cronbach’s α=0.90). Thus composite scores were calculated (ie, overall mean score of the seven affective ratings per person). There were no significant differences in the affective ratings or in the composite score in the medication error frame versus the hand hygiene frame. Doctors provided systematically more positive affective ratings as compared to nurses (table 3).

Correlations between affective rating scores and key outcome measures

HCPs’ mean affective rating scores (composite measure) and responses to the 4 attitudinal judgments were only weakly correlated: I approve of the family member’s behaviour (r=0.08, p=0.18); support for being asked as an HCP (r=0.10, p=0.07); the HCP responded in the correct manner (r=0.12, p=0.03); the situation would have positive effects on the family member–HCP relationship (r=0.26, p<0.001). Thus, overall, HCPs were more likely to expect positive effects on the family member–HCP relationship if they also perceived the HCP behaviour more favourably.

Results of the regression analyses

In multiple regression analyses, the impact of vignette attributes and respondents’ characteristics on each of the survey questions were modelled. The results of the Chow tests revealed that the coefficients of the medication error and the hand hygiene models were not equal for three of five outcomes measures (approval of behaviour; support of being asked as an HCP; affective rating composite score). Based on these findings we estimated separate models for the different error frames. The results of the regression analyses are displayed in tables 4–6.

The single most important predictor variable in all models was the described HCP response to the family member intervening (variable nr 7 in the tables). A discouraging HCP response (as compared with an encouraging response) was associated with decreased approval and support of the family member’s behaviour and affective ratings and had strong negative impact on the anticipated HCP–family member relationship. In both error frames, HCP reactions to the family member’s behaviour were strongly associated with respondents’

Table 3

<table>
<thead>
<tr>
<th>Affective items</th>
<th>Mean rating* (CI)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Doctors</td>
</tr>
<tr>
<td>Bad–Good</td>
<td>3.6 (3.4 to 3.8)</td>
<td>4.0 (3.7 to 4.2)</td>
</tr>
<tr>
<td>Difficult–Easy</td>
<td>3.7 (3.5 to 3.9)</td>
<td>4.2 (3.9 to 4.3)</td>
</tr>
<tr>
<td>Confrontational–Not confrontational</td>
<td>3.9 (3.7 to 4.1)</td>
<td>4.3 (3.9 to 4.5)</td>
</tr>
<tr>
<td>Not helpful–Very helpful</td>
<td>4.7 (4.6 to 4.9)</td>
<td>4.8 (4.6 to 5.0)</td>
</tr>
<tr>
<td>Very embarrassing–Not embarrassing</td>
<td>3.8 (3.5 to 4.0)</td>
<td>4.3 (4.0 to 4.6)</td>
</tr>
<tr>
<td>Challenging–Not challenging</td>
<td>4.1 (3.9 to 4.3)</td>
<td>4.7 (4.4 to 4.7)</td>
</tr>
<tr>
<td>Very uncomfortable–Comfortable</td>
<td>3.6 (3.4 to 3.8)</td>
<td>4.1 (3.8 to 4.3)</td>
</tr>
<tr>
<td>Composite, affective score†</td>
<td>3.9 (3.8 to 4.1)</td>
<td>4.2 (4.0 to 4.5)</td>
</tr>
</tbody>
</table>

* A 7-point response scale was used with the semantic differentials serving as anchor labels (higher scores indicating more favourable responses.
† Mean over the seven ratings per person.
The hypothetical family member's sex (variable nr 1) played a role in the evaluation of the interactions with staff (HCP response to being questioned and effects on the HCP–family member relationship) with male family members' interventions viewed less positively by responders. Family member's sex contributed considerably to HCP's affective ratings but with opposite directions in the medication and hand hygiene frames. Irrespective of vignette attributes, affective ratings were more positive when the family member intervening was a male in the hand hygiene frame while they were higher for female family members in the medication error scenario.

Whether the family member intervening was a daughter/son of a senior patient or mother/father of a hospitalised child (variable nr 2) was only marginally and sporadically associated with the outcome measures.

When family members were described as intervening in a challenging rather than an inquiring way (variable nr 5) this only had negative effects on approval and support of the behaviour in the medication error frames. In particular, it did not influence the affective ratings.

The profession of the HCP involved in the interaction with the family member (variable nr 4) impacted on the evaluations of the medication errors frames. The behaviour was more likely to be approved and seen as positively affecting the relationship in scenarios in which the family member intervened towards a doctor rather than a nurse.

The attribution of error (variable nr 6) was an important predictor in the hand hygiene models in particular. A false attribution of missed hand hygiene decreased approval and support of the behaviour and also had negative associations with the anticipated HCP–family member relationship. Notably, a false attribution of error had positive effects on the affective ratings in the medication error frame.

Whether the situation was witnessed by another HCP (variable nr 3) was only significantly associated with the affective ratings of the medication error frame but not with any of the other outcomes. The family member's behaviour was perceived less positive when the situation was witnessed by coworkers.

In comparison to vignette attributes, personal characteristics of respondents (variables 8–11) had only minor effects on their judgments: nurses as compared to doctors (variable nr 8) were significantly more likely to approve of the family member's behaviour (in the hand hygiene scenarios) and support the family member (both error frames). However, even after adjusting for vignette characteristics, doctors were more likely to provide higher affective ratings as compared to nurses. Other respondent's characteristics had only unsystematic and marginal effects on vignette ratings.
### DISCUSSION

This experimental vignette study set out to explore factors that influence HCPs’ attitudes towards family member’s involvement in two safety-relevant areas: asking HCPs about their hand hygiene and checking patients’ medication. To our knowledge, this is the first study into the acceptance of family member’s involvement in this area. Overall, we found a high level of support and approval for families intervening among surveyed HCPs in both error scenarios. However, over all described situations 60% disagreed that the family member’s behaviour would have positive effects on the relationship with the HCP. Across vignette attribute specifications, no differences between respondents’ attitudes towards the hand hygiene and the medication error frames were observed. Two factors in particular appeared to have a strong effect on attitudes—correct attribution of the error and how the HCP reacted to the family member’s involvement. Doctors (vs nurses) provided systematically more positive affective ratings to the vignettes. In particular, they rated the hypothetical situations as easier and more comfortable to manage and as less embarrassing.

We found some important differences from our previous studies on HCPs’ acceptance of patient involvement in safety.23 24 First, respondents’ evaluations of the vignettes were only slightly and unsystematically affected by how the family member intervened (challenging vs inquiring). Conversely however, our previous research revealed that patient behaviour was a strong predictor of HCPs’ approval, a finding also reflected in the wider literature. Garcia-Williams reported that HCPs’ level of support in patients asking them about their hand hygiene would ‘depend’ on how they were asked.15 Second, HCPs in previous studies were much more positive about patient engagement in medication safety and were more reluctant about involvement in hand hygiene. In this study, we found some differences in attributes affecting outcomes measures (eg, approval and affective ratings), but only minor differences in overall level of support between medication error and hand hygiene frames. Taken together, these results could potentially suggest that HCPs actually view family involvement differently as it involves a different dynamic to the patient interacting with them. Family (versus patient) engagement in safety seems to trigger less emotionally and strong responses by HCPs. The fact that the affective ratings were not as strong as in our previous studies also lends some support to this hypothesis.

Another apparent difference between this study and prior research into HCP attitudes is that doctors in our study provided more favourable affective ratings than nurses. In previous research, including those using similar vignettes, nurses were not only more willing to support being questioned themselves about safety-related issues by patients,23 24 29 they also reported more positive affective ratings.23 24 We can only speculate on the reasons for this finding. One explanation...
may be that doctors less often experience situations in which family members question or challenge them. As a consequence, they may underestimate the difficulty of the situation and emotionally demanding interaction. This study is the first of its kind to provide insight into HCPs’ acceptance of family members questioning them about hand hygiene and medication safety-related concerns. A main strength is that we used an experimental design to systematically manipulate factors and observe the effects of this manipulation, something we would not be able to control for in observational studies. Still, direct observation studies of family–HCP interactions relating to patient safety are warranted. This would deepen our understanding of how, where and by whom such interactions are initiated and how satisfactory they are for HCP and family members. A second strength is that we can directly explore areas of agreement and differences between HCPs’ attitudes towards patients’ and family members’ involvement in patient safety as we used the same factors and frames as in our previous studies. Finally, the response rate to the survey is reasonably good, in particular for an HCP sample.

The main limitation of our study is that we assessed attitudes and this is not always reflective of behaviour. We thus do not know how participants in our study would in reality respond to families engaging in the safety of their loved ones. We used ‘true life’ vignettes to improve and assimilate respondents’ conceptions of family behaviour but the responses are still biased by ‘hypotheticality’. The sample is relatively small and therefore may underestimate the differences between HCPs

Table 6 Results of multiple regression analyses (N=160)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Vignette attributes</th>
<th>Affective ratings scores</th>
<th>Hand hygiene vignettes</th>
<th>Medication error vignettes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coefficient</td>
<td>95% CI</td>
<td>p Value</td>
</tr>
<tr>
<td>1</td>
<td>Family member gender (1=male)</td>
<td>0.786</td>
<td>0.414 to 1.159</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Relation to patient (1=daughter/son of patient)</td>
<td>0.15</td>
<td>−0.356 to 0.386</td>
<td>0.935</td>
</tr>
<tr>
<td>3</td>
<td>Situation witnessed (1=yes)</td>
<td>0.179</td>
<td>−0.203 to 0.560</td>
<td>0.356</td>
</tr>
<tr>
<td>4</td>
<td>Staff occupation (1=doc)</td>
<td>−0.048</td>
<td>−0.417 to 0.321</td>
<td>0.797</td>
</tr>
<tr>
<td>5</td>
<td>Family member behaviour (1=challenging)</td>
<td>0.133</td>
<td>−0.260 to 0.475</td>
<td>0.564</td>
</tr>
<tr>
<td>6</td>
<td>Attribution of error (1=false)</td>
<td>−0.336</td>
<td>−0.716 to 0.044</td>
<td>0.083</td>
</tr>
<tr>
<td>7</td>
<td>Staff response (1=discouraging)</td>
<td>−1.621</td>
<td>−1.435 to −0.690</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>Doctor or nurse (1=nurse)</td>
<td>−0.525</td>
<td>−0.941 to −0.109</td>
<td>0.014</td>
</tr>
<tr>
<td>9</td>
<td>Age, years</td>
<td>0.025</td>
<td>−0.015 to 0.065</td>
<td>0.226</td>
</tr>
<tr>
<td>10</td>
<td>Sex (1=female)</td>
<td>−0.113</td>
<td>−0.552 to 0.327</td>
<td>0.613</td>
</tr>
<tr>
<td>11</td>
<td>Years of experience, years</td>
<td>−0.019</td>
<td>−0.062 to 0.024</td>
<td>0.375</td>
</tr>
<tr>
<td>12</td>
<td>constant</td>
<td>3.772</td>
<td>2.408 to 5.136</td>
<td>0.000</td>
</tr>
<tr>
<td>R-sqr</td>
<td></td>
<td>0.320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>overall model p</td>
<td></td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This study serves only as an initial step into research in family engagement in safety. Today, very little is known about family members’ attitudes and feelings about engagement, let alone strategies to encourage involvement and whether families would be more willing to act on their loved ones’ behalf than if they themselves were a patient in hospital. Future research is needed to enlighten the reasons and motivations underlying the attitudes as expressed by HCPs in our study. The vignettes could serve as a starting point in qualitative interview studies or focus groups with HCPs. Studies could use a similar design to explore family members’ attitudes towards involvement—this would be an interesting parallel and is yet to be explored. It would be valuable to examine patients’ perspectives on their families intervening. There may be occasions where patients do not want their family members to question staff. We also suggest studying the safety-related interactions between HCPs and family members in other medical settings, or even in comparison between settings, to gain a deeper understanding of the relevance of context. For example, family members of intensive care patients and the roles attributed to them may be viewed differently to other care settings due to patients often being unable to act for themselves in this context. HCPs in intensive care are also more used to being questioned and challenged by family members and may therefore experience less emotional distress when confronted by family members.
about safety-related issues. Also, little is known about the benefits and adverse effects of family involvement. While family members questioning HCPs could result in positive effects (ie, improved safety), the potential adverse consequences of involving them remain unknown, for example, it could potentially heighten anxiety, placing inappropriate responsibility on them when they are already worried about their loved one, or it could make them fear if they do not question HCPs the patient will be at increased risk. It may also create tensions in their relationship with HCPs—although our results do not seem to indicate this.

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Contributors DS conceptualised the study and designed the survey instrument with the assistance of RD. RD monitored data collection and entry for the survey and DS analysed data. RD and DS drafted and revised the paper. RD is the guarantor. MS, RS and SS collected the data and provided feedback on the paper.

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Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement No additional data are available.

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