



## Research article

## Family presence during resuscitation – The experiences and views of Polish nurses



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## ABSTRACT

Understanding healthcare professionals perceptions of family presence during resuscitation (FPDR) may help in choosing an effective strategy of implementing this concept in everyday clinical practice.

**Objectives:** To determine the experiences and views of Polish nurses about family witnessed resuscitation.

**Design:** A cross sectional survey study.

**Setting:** Delegates (n = 720) attending the Polish Association of Anaesthesia and Intensive Care Nurses conference participated in the study. A total of 240 questionnaires were correctly completed and returned.

**Main Outcome Measures:** Validation of the Polish version of the tool was undertaken. Exploratory factor analysis extracted three main factors: staff opinions on the benefits of FPDR ( $\alpha$ -Cronbach 0.86), opinions on the negative effects ( $\alpha$ -Cronbach 0.74) and general views on this practice ( $\alpha$ -Cronbach 0.54). These three extracted factors were defined as dependent variables.

**Results:** Out of the sample, 113 (47%) nurses worked in adult intensive care units (ICUs) and 127 (53%) in other acute clinical settings. ICU nurses reported having experiences of FPDR (n = 66, 54%); out of this group 12 (10%) had positive encounters and 46 (38%) reported negative ones. ICU nurses had undetermined opinions on the benefits and potential negative effects of FPDR. Having positive experiences with FPDR influenced ICU nurses' views on the negative effects of FPDR ( $Z = -2.16, p < 0.03$ ).

**Conclusion:** A positive experience of FPDR influences a nurse's views and attitudes in this evolving area of practice.

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## Implications for Clinical Practice

- The process of changing attitudes towards family presence during resuscitation requires positive work environments where positive experiences would be acquired by health care professionals.
- Evidence supports that introducing educational strategies and building healthcare professionals' self-confidence are important factors influencing opinions and attitudes towards family presence during resuscitation.
- The results of this study suggest that there is a need for a wide-spread professional debate on in Poland in order to reassure health care professionals.

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## Introduction

The concept of family presence during resuscitation (FPDR) has been presented and analysed in research since the 1980s. The idea of FPDR originated in 1982 in Foote Hospital in Jackson, Michigan, the United States of America (USA) after a patient's family requested it (Doyle et al., 1987). It was the patient's family and the awareness of their expectations that inspired Doyle et al. to initially take steps to scientifically verify the benefits and dangers connected with FPDR. Since then, a number of studies have examined issues associated with FPDR mostly in terms of benefits and possible harms that it may cause to healthcare staff, family members or patients.

Many authors have reported evidence suggesting benefits of family witnessing resuscitation. Robinson et al. (1998) claimed that there were no detrimental psychological effects of FPDR and that family members were satisfied with the opportunity to be at the patient's bedside during cardiopulmonary resuscitation (CPR). The study of Holzhauser et al. (2006) supported the findings of Robinson et al. (1998), identifying that relatives find it beneficial to be present in the resuscitation room. They identified FPDR helped communication between staff and family and helped relatives to cope with the situation. They also found that family members present during CPR were satisfied with being offered such a chance and there were no complaints made about the experience. Research identifying FPDR may also help families to build trust with health professionals and fulfil their needs for information (Leske et al., 2013).

Studies exploring the intensity of post-traumatic stress disorder (PTSD) symptoms and depression between the families who were present and those who were absent during CPR, found no significant differences between the two groups (Compton et al., 2011). Jabre et al. (2013) also observed that PTSD symptoms occurred significantly more often in family members who declined to be present than those who attended CPR. Moreover, at one year following the event, those who agreed to witness the resuscitation of a family member adjusted emotionally and in terms of bereavement, adjusted to the loss (Jabre et al., 2014). Additionally, a recent systematic overview and meta-analysis of three studies (Oczkowski et al., 2015a) concluded that moderate quality evidence indicates that FPDR for adult patients does not translate to long term emotional problems, but may improve the process of bereavement.

As a consequence of a growing international body of evidence, a number of societies have developed or revised their practice guidelines related to family presence during resuscitation (Table 1).

## Background

The analysis of literature indicates that healthcare professionals (HCPs) recognise the benefits and risks of FPDR, but views vary between countries. The practice has become accepted to some extent in Canada (McClement et al., 2009), USA (Tudor et al., 2014), the United Kingdom (Grice et al., 2003) and Australia (Chapman et al., 2013). However, in Iran (Kianmehr et al., 2010), Jordan (Hayajneh, 2013), Germany (Koberich et al., 2010), Israel (Wacht et al., 2010), Turkey (Güneş and Zaybak, 2009), Hong Kong (Leung and Chow, 2012), Spain (Enriquez et al., 2016), and Singapore (Ong et al., 2007) the practice of FPDR is not viewed as clinically acceptable due to potential physical threats of harm to staff. The views on FPDR also vary between healthcare professionals, for example, nurses tend to be more positive about FPDR than doctors (Grice et al., 2003; McClenathan et al., 2002; Weslien and Nilstun, 2003).

Despite existing worldwide recommendations, the practice of FPDR remains challenging to implement in Poland (Sak-Dankosky et al., 2015).

### Aims of the study

The aims of the study were:

- 1) To determine the experiences of FPDR from anaesthesia and intensive care nurses attending the conference of the Polish Association of Anaesthesia and Intensive Care Nurses (PTPAiIO).
- 2) To explore delegates' perceptions of the risks and benefits associated with FPDR.
- 3) To establish factors influencing delegates' general view of the risks and benefits of FPDR.

## Methods

### Study design

A cross-sectional survey study design was used among anaesthesia and intensive care nurses attending a national conference to determine their experiences and opinions on FPDR. No nationwide studies have yet been carried out in Poland on the concept of FPDR, so the survey technique was used to provide a wide view of the issue.

**Table 1**  
Practice guidelines and recommendations related to family presence during resuscitation.

Society	Recommendations	Source
American Association of Critical-Care Nurses	Family Presence During Resuscitation and Invasive Procedure. AACN Practice Alert	<a href="#">American Association of Critical-Care Nurses (2016)</a>
American Heart Association	Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Part 3: Ethics	<a href="#">Morrison et al. (2010)</a>
Canadian Association of Critical Care Nurses	Position Statement Family Presence During Resuscitation	<a href="#">The Canadian Association of Critical Care Nurses (2005)</a>
Canadian Critical Care Society	Family presence during resuscitation: A Canadian Critical Care Society position paper	<a href="#">Oczkowski et al. (2015b)</a>
Emergency Nurses Association	Clinical Practice Guideline: Family Presence During Invasive Procedures and Resuscitation	<a href="#">Emergency Nurses Association (2012) Revised 5/2014</a>
European Federation of Critical Care Nursing Associations, European Society of Pediatrics and Neonatology Intensive Care, European Society of Cardiology Council on Cardiovascular Nursing	Join Position Statements: The Presence of Family Members During Cardiopulmonary Resuscitation	<a href="#">Fulbrook et al. (2007)</a>
European Resuscitation Council	Guidelines for Resuscitation 2015 Section 11. The ethics of resuscitation and end-of-life decisions	<a href="#">Bossart et al. (2016)</a>

### Participants' selection

The study was conducted during the conference of the PTPAiO in September 2013, in Poland. The study's research protocol was presented to the executive board of the PTPAiO and to the head of the conference organising committee for approval. Written approval dated 1st of September 2013 and permission to collect the data were obtained.

The conference programme included a lecture on the current state of knowledge on the concept of FPDR. This fact was considered in the analysis of the risks and burdens for the participants and potential influence on the study results. However, taking into account the purpose of the study and the nature of the research problem, it was concluded that the benefits outweighed the potential risks.

Delegates attending the PTPAiO conference in Poland were all given a self-administered questionnaire to complete. In the delegate pack, each participant received a copy of the questionnaire and an information letter outlining the aim of the study and its voluntary and anonymous character. Completion of the questionnaire implied consent.

In total 720 questionnaires were distributed to participants; of these 352 were returned; 240 were completed by registered nurses. Due to the fact that in Poland, anaesthesia nurses and intensive care nurses function as one nursing speciality and are employed in various hospitals' departments providing care in critical, intensive and acute settings, the analyses included questionnaires filled in by nurses working at intensive care units (ICUs) and other hospital departments where intensive monitoring of patients' health status is provided. However, data concerning ICU nurses were analysed separately. Excluded questionnaires were either those returned by paramedics, doctors, midwives, paediatric nurses or those incorrectly filled in.

### The study tool

The study tool used, with permission, was a previously designed instrument – the Family Presence during CPR in intensive/critical care setting: a European perspective (FP-CPR) questionnaire by Fulbrook et al. (2005), which was translated into Polish. The approved Polish version of the FPDR questionnaire was translated back to English and reviewed by the leader author of the research that first published this tool.

Like the original, the Polish version of the FP-CPR questionnaire consists of three parts: 1) biographical details, 2) family presence: experiences and 3) family presence: attitudes. In the second section (experiences) respondents answered six Yes/No questions, whilst in the third section (attitudes) they expressed their attitudes towards each of 30 statements in the five point Likert scale, ranging from 'strongly disagree' to 'strongly agree'.

Construct validity was analysed for the third part of the questionnaire, which referred to the attitudes of nursing staff towards FPDR, with the use of exploratory factor analysis; the extraction method used was principal axis factoring and Varimax rotation with Kaiser normalisation. The Varimax methods used orthogonal rotation of extracted factors to obtain more precise factor loadings of the original variables, which helps in the interpretation of factors. Factor loadings are the correlations of each scale item with a factor and reflect the importance of a particular item to the factors. Scale items with a loading below 0.4 were rejected. Exploratory factor analysis extracted three main factors: 1) opinions on the benefits of FPDR, 2) opinions on the negative effects and 3) general views on FPDR (Table 2). Both the reliability of particular factors and the entire third part of the questionnaire – family presence: attitudes were evaluated using the  $\alpha$ -Cronbach coefficient.

**Table 2**

Main factors selected in the Polish version of Family Presence during CPR in an intensive/critical care setting: a European perspective (FP-CPR) questionnaire.

Factor 1*. Opinions on the FPDR benefits eigenvalue 6.5, $\alpha$ -Cronbach 0.86	Factor Loadings
In the situation when the patient does not survive, the fact that they were present during CPR helps the family in the grieving process	0.72
Family members should always be offered the possibility to accompany the patient during CPR. It should be their decision	0.72
The presence of family during unsuccessful CPR is important as it enables the family to spend together the last moments of patient's life	0.70
Being present during CPR helps family members to conclude that everything possible has been done for the patient	0.68
Family members who are present during CPR are more likely to accept the decision to withdraw from persistent treatment	0.67
Family members should be present during CPR, as it will enable them to take decisions concerning the patient	0.65
Family presence during CPR is beneficial for the patient	0.63
Family presence during CPR creates stronger bond between family and nursing staff	0.63
Family presence during CPR prevents the relatives from creating distorted images or incorrect views of the resuscitation process	0.61
The presence of family members during CPR has positive effects on the performance of the team	0.59
<b>Factor 2*. Opinions on the negative effects of FPDR eigenvalue 3.1, <math>\alpha</math>-Cronbach 0.74</b>	<b>Factor Loadings</b>
Family presence during CPR can infringe confidentiality of discussing details about the patient	0.65
Family members do not understand the need to use specific interventions so they might argue with the resuscitation team	0.53
There will be an increase in legal actions against medical staff because the family members present during CPR might misunderstand the course of resuscitation process	0.70
It is difficult for medical staff performing CPR to concentrate if they are observed by family members	0.68
During CPR the resuscitation team might say things that are upsetting for family members	0.51
Family members should not be present during CPR because it is too stressful for them	0.49
Family members are very likely to hinder the resuscitation process	0.45
Family members present during CPR will suffer long-term negative emotional effects	0.42
<b>Factor 3*. General view on FPDR eigenvalue 1.6, <math>\alpha</math>-Cronbach 0.54</b>	<b>Factor Loadings</b>
Most patient rooms in my workplace are too small to have relatives of the patient during resuscitation	–0.35
Family member presence during CPR should not be a standard practice	–0.54
FP-CPR questionnaire in general $\alpha$ -Cronbach 0.87	

\*Factor analysis (n = 240) extraction method: principal axis factoring, rotation method: Varimax with Kaiser normalisation.

FPDR – Family Presence During Resuscitation (FPDR).

CPR – cardiopulmonary resuscitation.

FP-CPR – The Family Presence during CPR in intensive/critical care setting: a European perspective (FP-CPR) questionnaire.

## Data analysis

The analysis was conducted using a statistical package Statistica 10 Polish version. The study adopted the demographic data and the nurses' experience with FPDR as independent variables. The dependent variables were factors extracted in the course of exploratory factor analysis. However, due to the fact that internal consistency of factor 3 *general view on FPDR* was below accepted value ( $\alpha$ -Cronbach 0.54), further analyses related to this factor were not conducted. The Lilliefors test was used for verification of data distribution normality. The distribution of data related to particular extracted factors was not compatible with a normal distribution ( $p < 0.01$ ), therefore, non-parametric tests were used in further analyses. The distribution of other data was normal.

Descriptive analysis using median (Mdn) and quartiles (Q25–Q75) was used to describe each of the extracted factors; number and percentage were used to describe the respondents' demographic characteristics. The significance of differences between the demographic features of ICU and non-ICU nurses' and their experiences related to FPDR were analysed using the chi-square test ( $\chi^2$ ).

An analysis of the significance of differences between the experiences related to FPDR in the particular ICU and non-ICU nurses' groups and the individual extracted factors was carried out using the non parametric Mann-Whitney *U* test and reported using *z* values (*Z*). Additionally, the relationship between the demographic variables and the extracted dependent variables was analysed using the Kruskal-Wallis test (*H*).

Answers to particular questions regarding attitudes towards FPDR were rated on the scale from 1 to 5. The median value constituted the score range awarded for the particular answers to statements included in the each factor. The statistical significance level was set at  $p < 0.05$  in a two-tailed test.

## Results

### Study group

The study population included 240 nurses, 10 (4%) men and 230 (96%) women. Out of this, 113 (47%) nurses worked in adult intensive care units (ICUs). Other nurses ( $n = 127$ , 53%) worked outside of ICU, including emergency departments ( $n = 9$ , 4%), anaesthesia stations ( $n = 54$ , 22.5%), operating theatre ( $n = 13$ , 5.5%), recovery rooms ( $n = 11$ , 4.5%) and other hospital departments where intensive monitoring of patient health status is provided ( $n = 47$ , 9.5%).

Most nurses were older than 35 years ( $n = 201$ , 84%), had more than 10 years of experience in their current speciality ( $n = 179$ ,

75%) and worked more than 10 years in nursing ( $n = 206$ , 86%). No significant differences between ICU and non-ICU nurses were found in age ( $\chi^2 = 1.96p = 0.37$ ), work experience in current speciality ( $\chi^2 = 0.07p = 0.79$ ) and work experience in nursing ( $\chi^2 = 1.43p = 0.23$ ).

### Analysis of nurses' experience concerning family presence during CPR

More than half of the nurses working in ICU ( $n = 66$ , 54%) reported having experiences of FPDR; additionally, out of this group 12 (10%) had positive encounters and 46 (38%) reported negative ones. Moreover, 23 (19%) of ICU nurses have been asked by a family member if they could be present during CPR, although only 7 (6%) had ever invited a family member to be present during CPR. When compared to ICU nurses, non-ICU nurses experienced FPDR less frequently ( $\chi^2 = 7.97 p = 0.004$ ) and reported fewer negative experiences related to family members being present during CPR,  $\chi^2 = 5.2 p = 0.03$ , (Table 3).

### Analysis of nurses' attitudes towards family presence during CPR

Descriptive statistics of the extracted factors are presented in Table 4. Due to significant differences between the experiences with FPDR of ICU and non-ICU nurses, analyses were carried out for these two groups separately.

**Factor 1:** Opinions on the benefits of FPDR were formed from ten statements which listed potential benefits to family, patients and healthcare providers related to FPDR (Table 2). For this factor, the higher median values indicated more positive opinions on FPDR benefits, from 1 (strongly negative opinions) to 5 (strongly positive opinions). For ICU nurses, the median value was 2.50 (Q1–Q3 = 2.20–2.90) compared to 2.60 (Q1–Q3 = 2.30–2.90) for non-ICU nurses (Table 4); there were no statistically important differences in the perception of the benefits of FPDR between the two groups of nurses ( $Z = -0.77$ ,  $p < 0.44$ ). Overall, the results indicated that nurses had neither positive nor negative opinions on FPDR benefits.

**Factor 2:** Opinions on the negative effects of FPDR were formed from eight statements which listed potential risks and negative effects of FPDR (Table 2). For factor 2, the lower median values indicated more positive attitudes towards FPDR, from 1 (strongly positive attitudes) to 5 (strongly negative attitudes). The ICU nurses' median value was 2.13 (Q1–Q3 = 1.88–2.50) compared to 2.55 (Q1–Q3 = 0.89–2.63) for non-ICU nurses (Table 4). The results indicated that nurses working in ICU supported the negative statements about FPDR less frequently than non-ICU nurses; additionally their attitudes towards FPDR were neutral or rather positive.

**Table 3**  
Family presence during resuscitation experiences of ICU and non-ICU nurses.

Family presence: experiences	ICU nurses		Non-ICU nurses		Test $\chi^2$	<i>p</i> value
	Yes N (%)	No N (%)	Yes N (%)	No N (%)		
Have you experienced a situation in which family members were present during CPR?	66 (54.1)	47 (38.52)	51 (27.13)	76 (40.43)	7.97	0.004
Has a family member ever asked you if they could be present during CPR?	23 (18.85)	90 (73.77)	28 (14.89)	99 (52.66)	0.05	0.82
Have you ever invited a family member to be present during CPR?	7 (5.74)	106 (86.89)	2 (1.06)	125 (66.49)	2.71	0.09
Does your unit/ward have a protocol or policy document on family presence during CPR?	26 (21.31)	84 (68.85)	23 (12.23)	102 (54.26)	1.8	0.17
Have you had one or more positive experiences of family members being present during CPR?	12 (9.84)	101 (82.79)	10 (5.32)	117 (62.23)	0.66	0.41
Have you had one or more negative experiences of family members being present during CPR?	46 (37.7)	67 (54.92)	34 (18.09)	93 (49.47)	5.2	0.03

CPR – cardiopulmonary resuscitation.

ICU – Intensive care unit.

**Table 4**  
Descriptive statistics of the extracted factors related to attitudes towards FPDR.

Factors	N	Median	Q1	Q3	IQR
<i>Attitudes of all nurses in general</i>					
1.Opinions on the FPDR benefits	240	2.55	2.20	2.90	0.70
2.Opinions on the negative effects of FPDR	240	2.13	1.88	2.56	0.68
<i>Attitudes of ICU nurses</i>					
1.Opinions on the FPDR benefits <sup>1</sup>	113	2.50	2.20	2.90	0.70
2.Opinions on the negative effects of FPDR <sup>2</sup>	113	2.13	1.88	2.50	0.62
<i>Attitudes of non-ICU nurses</i>					
1.Opinions on the FPDR benefits <sup>1</sup>	127	2.60	2.30	2.90	0.60
2.Opinions on the negative effects of FPDR <sup>2</sup>	127	2.25	1.89	2.63	0.74

FPDR – Family Presence during Resuscitation (FPDR).

ICU – Intensive care unit.

Q1 – the first quartile.

Q3 – the third quartile.

IQR – the interquartile range.

<sup>1</sup> The median value constitute the score range from 1 to 5. higher median values indicate more positive attitudes towards FPDR, from 1. (strongly negative attitudes) to 5. (strongly positive attitudes).

<sup>2</sup> The median value constitute the score range from 1 to 5. higher median values indicate more negative attitudes towards FPDR, from 1. (strongly positive attitudes) to 5. (strongly negative attitudes).

Also, non-ICU nurses had neutral attitudes towards FPDR with the results indicating that they chose the “do not know” option when they were answering statements which listed negative effects of FPDR. However, a significant difference between ICU and non-ICU nurses was not found ( $Z = -0.45, p < 0.64$ ).

#### Impact of nurses' experience on their attitudes and views

The study analysed whether nurses' experience of FPDR influenced their opinions on the FPDR benefits (factor 1) and opinions on the negative effects of FPDR (factor 2). No significant relationships were observed between ICU nurses' answers to the question: *Have you experienced a situation in which family members were present during CPR* and opinions on the FPDR benefits ( $Z = -0.56, p < 0.57$ ) and the negative effects of FPDR ( $Z = 1.87, p < 0.06$ ); this was also the case for non-ICU nurses' opinions on the FPDR benefits ( $Z = 0.10, p < 0.92$ ) and negative effects of FPDR ( $Z = 0.01, p < 0.99$ ).

Analysis of the impact of having one or more positive or negative experiences related to FPDR on each extracted factor was conducted for ICU and non-ICU nurses' groups separately. For ICU nurses, having one or more negative experiences of FPDR ( $n = 46, 38\%$ ) was not significantly related to opinions on the negative effects of the FPDR ( $Z = -0.19, p < 0.85$ ) (Table 5). What was noted was that having one or more positive experiences related to FPDR significantly influenced the ICU nurses' views on the negative effects of FPDR ( $Z = -2.16, p < 0.03$ ) (Table 5). ICU nurses who had positive experiences of FPDR ( $n = 12, 10\%$ ) had a lower score in perception of negative effects of FPDR (Mdn = 2.12) than nurses without positive experiences (Mdn = 2.5); this means that having a

positive experience of FPDR results in a more positive attitude towards this procedure.

For non-ICU nurses, there were no significant relationships between answers of nurses who had positive experiences of FPDR ( $n = 10, 5\%$ ) and their opinions on the FPDR benefits ( $Z = -0.37, p < 0.71$ ) and the negative effects of this procedure ( $Z = 1.66, p < 0.10$ ); additionally there were no significant relationships between answers of non-ICU nurses who had negative experiences of FPDR ( $n = 34, 18\%$ ) and their opinions on the FPDR benefits ( $Z = -0.69, p < 0.49$ ) and the negative effects of FPDR ( $Z = 0.42, p < 0.68$ ).

An analysis of the relationship between the respondents' demographic characteristics and the extracted factors was conducted for both groups of nurses together. The Kruskal-Wallis test revealed no statistically significant differences ( $p > 0.05$ ) between nurses' attitudes and respondents' age ( $H = 0.37, p < 0.83$ ), place of work ( $H = 0.82, p < 0.86$ ), position ( $H = 0.23, p < 0.42$ ) and work experience ( $H = 0.35, p < 0.54$ ).

#### Discussion

The aim of the study was to determine the experiences of FPDR, perception of its risks and benefits and also establish a general view on factors influencing the attitudes of Polish anaesthesia and intensive care nurses towards FPDR.

As shown in our study, 54% of Polish nurses working in ICUs and 27% of nurses working in other clinical settings had experienced FPDR; however only 10% of ICU and 5% of non-ICU nurses had one or more positive experiences in FPDR, whilst 38% of ICU nurses and 18% of other nurses had negative experiences.

**Table 5**  
Impact of ICU nurses' experience on their opinions and attitudes towards FPDR.

Test U Manna-Whitneya	Opinions on the FPDR benefits (factor 1)		Opinions on the negative effects of FPDR (factor 2)	
	Z	p	Z	P
Have you experienced a situation in which family members were present during CPR?	-0.56	0.57	1.87	0.06
Has a family member ever asked you if they could be present during CPR?	-0.59	0.56	1.64	0.10
Have you ever invited a family member to be present during CPR?	-3.25	0.001	-0.67	0.50
Does your unit/ward have a protocol or policy document on family presence during CPR?	2.05	0.04	-1.05	0.29
Have you had one or more positive experiences of family members being present during CPR?	-1.21	0.23	-2.16	0.03
Have you had one or more negative experiences of family members being present during CPR?	-1.29	0.20	-0.19	0.85

FPDR – Family Presence During Resuscitation (FPDR).

CPR – cardiopulmonary resuscitation.

A study on the experiences and attitudes of nurses and physicians working in ICU and ED towards adult FPDR in hospitals in Poland and Finland was conducted by Sak-Dankosky et al. (2015). This was the first study to analyse the experiences and attitudes towards FPDR of Polish HCPs. Moreover, Sak-Dankosky et al. also used the FP-CPR questionnaire translated into Polish. The comparison of results reported by them with data of our study is difficult because we examined only nurses, whereas they included nurses and physicians from Poland and Finland. Sak-Dankosky et al. reported that 35% of HCPs in the study experienced FPDR, out of which 12% had one or more positive experiences and 23% had one or more negative experiences. They also reported that Polish HCPs more often had had negative experiences of FPDR when compared to Finnish HCPs; these findings are similar to our findings highlighting Polish nurses' negative experiences of FPDR.

We also found that nurses in Poland lack positive experiences in FPDR. Bassler (1999) demonstrated that a lack of experience or education on FPDR may affect staff's attitudes and perceptions. He found out that nurses' beliefs regarding FPDR changed to a statistically significant level after attending the FPDR education programme. Similar results were reported by other authors identifying that further education and increasing experience with FPDR are associated with increased support for FPDR (Oczkowski et al., 2015b), that introducing the topic of FPDR within nursing curricula helps resolve concerns and objections towards FPDR (Koberich et al., 2010) and that nurses' self-confidence and perceived benefits of FPDR are significantly related (Tudor et al., 2014). This evidence suggests that the process of changing attitudes towards FPDR requires education on FPDR and a positive work environment where positive experiences of FPDR would be acquired by HCPs.

Our findings indicate that having positive experiences results in more positive opinions towards FPDR. Similar results were reported by Sak-Dankosky et al. (2015); additionally, Sak-Dankosky et al. reported that having one or more negative experiences of FPDR results in having more negative opinions on this matter. Although, many of Polish nurses working in ICU had the negative experiences of FPDR, we identified that ICU nurses had undetermined/neutral opinions on the benefits and potential negative effects of FPDR; we found no relationship between having the negative experiences of FPDR and opinions on the negative effects of FPDR. These findings suggest that having positive experiences of FPDR may be a more important factor influencing positive opinions on FPDR than having negative experiences. All these findings indicate that in Poland there is a need for a wide-spread professional debate on this subject in order to reassure HCPs in FPDR.

### Limitations

The results of our study must be interpreted with caution, mostly because of the sampling method used in the study; generalisation of findings might be limited because only delegates of the national conference of PTPAiO were eligible to participate in the study. Also the representativeness of results might be questioned because the study group was composed of anaesthesia and intensive care nurses working in various clinical settings. Cardiopulmonary arrest does not occur with the same frequency in all of these settings, therefore the concept of FPDR might be unfamiliar to nurses who work outside of ICUs. The authors tried to solve this problem by extracting the data from the ICU and non-ICU nurses' groups. The majority of statistical analyses were conducted for these groups separately. Yet our results still provide a global view of Polish nurses' opinions and attitudes towards FPDR. Finally, we were not able to analyse educational factors that might influence nurses' attitudes towards FPDR, such as completed post-graduation training, speciality certification or being a member of

nurses' professional organisations as these data were not collected; this once again limits interpretation and generalisation of the results.

### Conclusions

Despite growing evidence on the benefits of FPDR, the implementation of the recommendations on FPDR remains controversial in Poland. The data suggest that most anaesthesia and intensive care nurses in Poland have negative experiences related to FPDR and neutral or slightly positive attitudes towards FPDR. Our findings indicate that having positive experiences in FPDR significantly influences opinions on the negative effects; the more positive the previous experience on FPDR, the less negative opinions nurses have. Factors such as education, an increasing number of positive experiences and building self-confidence on FPDR seem to be crucial in the process of successfully introducing FPDR into clinical practice.

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### Conflict of interest

None.

### Author's contributions

All authors have made substantial contributions to the conception and design of the study, analysis and interpretation of data, revising the article critically for important intellectual content and final approval of the version submitted.

### Ethical statement

The study *Family Presence During Resuscitation – the experiences and views of Polish nurses* was conducted in accordance with the principles of the Declaration of Helsinki. The study approval and permission to collect the data were obtained from the board of Polish Association of Anesthesia and Intensive Care Nurses (PTPAiO) and organizational committee of the 7th PTPAiO Conference organized by the Polish Association of Anesthesia and Intensive Care Nurses in Karpacz on 26–28th of September 2013.

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### References

- American Association of Critical-Care Nurses, 2016. Family Presence during Resuscitation and Invasive Procedure. AACN Practice Alert 2016. Crit. Care Nurse 36 (1), e11–e14. <https://doi.org/10.4037/ccn2016980>.
- Bassler, P., 1999. The impact of education on nurses' beliefs regarding family presence in a resuscitation room. J. Nurses Staff Dev. 15, 126–131 <http://journals.lww.com/jnsdonline/pages/articleviewer.aspx?year=1999&issue=05000&article=00007&type=abstract> (accessed January 10th, 2017).
- The Canadian Association of Critical Care Nurses, 2005. Position Statement Family Presence during Resuscitation <http://www.caccn.ca/en/pdfs/CACCN%20Family%20Presence%20During%20Resuscitation%20Oct%202005.pdf>, . accessed January 10th, 2017.

- Chapman, R., Watkins, R., Bushby, A., Combs, S., 2013. Assessing health professionals' perceptions of family presence during resuscitation: a replication study. *Int. Emerg. Nurs.* 21 (1), 17–25. <https://doi.org/10.1016/j.ienj.2011.10.003>.
- Compton, S., Levy, P., Griffin, M., Waselewsky, D., Mango, L., Zalenski, R., 2011. Family-witnessed resuscitation: bereavement outcomes in an urban environment. *J. Palliat. Med.* 14 (6), 715–721. <https://doi.org/10.1089/jpm.2010.0463>.
- Doyle, C.J., Post, H., Burney, R.E., Maino, J., Keefe, M., Rhee, K.J., 1987. Family participation during resuscitation: an option. *Ann. Emerg. Med.* 16, 673–675. [https://doi.org/10.1016/S0196-0644\(87\)80069-0](https://doi.org/10.1016/S0196-0644(87)80069-0).
- Emergency Nurses Association, 2012. Clinical Practice Guideline: Family Presence During Invasive Procedures and Resuscitation. Revised 5/2014. <https://www.ena.org/practice-research/research/CPG/Documents/FamilyPresenceCPG.pdf> (accessed January 10<sup>th</sup>, 2017).
- Enriquez, D., Mastandueno, R., Flichtentrei, D., Szyld, E., 2016. Relatives' presence during cardiopulmonary resuscitation. *Glob. Heart* 3. <https://doi.org/10.1016/j.gheart.2016.01.007>.
- Bossaert, L.L., Perkins, G.D., Askitopoulou, H., Raffay, V.I., Greif, R., Haywood, K.L., Xanthos, T.T., 2016. Section 11. The ethics of resuscitation and end-of-life decisions, in: *European Resuscitation Council Guidelines for Resuscitation 2015*. Resuscitation 95, 302–311.
- Fulbrook, P., Albarran, J.W., Latour, J.M., 2005. A European survey of critical care nurses' attitudes and experiences of having family members present during cardiopulmonary resuscitation. *Int. J. Nurs. Stud.* 42, 557–568.
- Fulbrook, P., Latour, J., Albarran, J.W., de Graaf, W., Lynch, F., Devictor, D., Norekval, T., 2007. The Presence of Family Members during Cardiopulmonary Resuscitation: European Association of Critical Care Nursing Associations, European Society of Pediatric and Neonatal Intensive Care, European Society of Cardiology Council on Cardiovascular Nursing and Allied Professions Joint Position Statement. *Eur. J. Cardiovasc. Nurs.* 6 (4), 255–258. <https://doi.org/10.1016/j.ejcnurse.2007.07.003>.
- Grice, A., Picton, P., Deakin, C.D.S., 2003. Study examining attitude of staff, patients and relatives to witnessed resuscitation in adult intensive care units. *Br. J. Anaesth.* 91 (6), 820–824. <https://doi.org/10.1093/bja/aeg276>.
- Güneş, U.Y., Zaybak, A., 2009. A study of Turkish critical care nurses' perspectives regarding family-witnessed resuscitation. *J. Clin. Nurs.* 18, 2907–2915. <https://doi.org/10.1111/j.1365-2702.2009.02826.x>.
- Hayajneh, F.A., 2013. Jordanian professional nurses' attitudes and experiences of having family members present during cardiopulmonary resuscitation of adult patients. *Crit. Care Nurs. Q.* 36 (2), 218–227. <https://doi.org/10.1097/CNQ.0b013e31828414c0>.
- Holzhauser, K., Finucane, J., DeVries, S.M., 2006. Family presence during resuscitation. A randomized controlled trial of the impact of family presence. *Austr. Emerg. Nurs. J.* 8 (4), 139–147. <https://doi.org/10.1016/j.aenj.2005.10.003>.
- Jabre, P., Belpomme, V., Azoulay, E., Jacob, L., Bertrand, L., Lapostolle, F., Adnet, F., 2013. Family presence during cardiopulmonary resuscitation. *N. Engl. J. Med.* 14 (368), 1008–1018. <https://doi.org/10.1056/NEJMoa1203366>.
- Jabre, P., Tazarourte, K., Azoulay, E., et al., 2014. Offering the opportunity for family to be present during cardiopulmonary resuscitation: 1 year assessment. *Intensive Care Med.* 40, 981–987. <https://doi.org/10.1007/s00134-014-3337-1>.
- Koberich, S., Kaltwasser, A., Rothaug, O., Albarran, J.W., 2010. Family witnessed resuscitation – experience and attitudes of German intensive care nurses. *Nurs. Crit. Care* 15 (5), 241–250. <https://doi.org/10.1111/j.1478-5153.2010.00405.x>.
- Kianmehr, N., Mofidi, M., Rahmani, H., Shahin, Y., 2010. The attitudes of team members towards family presence during hospital-based CPR: a study based in the Muslim setting of four Iranian teaching hospitals. *J. R. Coll. Phys. Edinb.* 40 (1), 4–8. <https://doi.org/10.4997/JRCPE.2010.102>.
- Leske, J.S., McAndrew, N.S., Brasel, K.J., 2013. Experiences of families when present during resuscitation in the Emergency Department after trauma. *J. Trauma Nurs.* 20 (2), 77–85. <https://doi.org/10.1097/JTN.0b013e31829600a8>.
- Leung, N.Y., Chow, S.K., 2012. Attitudes of healthcare staff and patients' family members towards family presence during resuscitation in adult critical care units. *J. Clin. Nurs.* 21, 2083–2093. <https://doi.org/10.1111/j.1365-2702.2011.04013.x>.
- McClement, S.E., Fallis, W.M., Pereira, A., 2009. Family presence during resuscitation: Canadian critical care nurses' perspectives. *J. Nurs. Scholarsh.* 41 (3), 233–240. <https://doi.org/10.1111/j.1547-5069.2009.01288.x>.
- McClenathan, B.M., Torrington, K.G., Uyehara, C., 2002. Family member presence during cardiopulmonary resuscitation: a survey of US and international critical care professionals. *Chest* 122 (6), 2204–2211. <https://www.ncbi.nlm.nih.gov/pubmed/?term=Family+member+presence+during+cardiopulmonary+resuscitation%3A+a+survey+of+US+and+international+critical+care+professionals> <https://www.ncbi.nlm.nih.gov/pubmed/?term=Family+member+presence+during+cardiopulmonary+resuscitation%3A+a+survey+of+US+and+international+critical+care+professionals> (accessed January 10<sup>th</sup>, 2017).
- Morrison, L.J., Kierzek, G., Diekema, D.S., Sayre, M.R., Silvers, S.M., Idris, A., Mancini, M.E., 2010. Part 3: Ethics: American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care 122, S665–S675. <https://doi.org/10.1161/CIRCULATIONAHA.110.970905>.
- Oczkowski, S.J.W., Mazzetti, I., Cupido, C., Fox-Robichaud, A.E., 2015a. The offering of family presence during resuscitation: a systematic review and meta-analysis. *J. Intensive Care* 3 (41). <https://doi.org/10.1186/s40560-015-0107-2>.
- Oczkowski, S.J.W., Mazzetti, I., Cupido, C., Fox-Robichaud, A.E., 2015b. Family presence during resuscitation: a Canadian Critical Care Society position paper. *Can. Respir. J.* 22 (4), 201–205.
- Ong, M.E., Chung, W.L., Mei, J.S., 2007. Comparing attitudes of the public and medical staff towards witnessed resuscitation in an Asian population. *Resuscitation* 73 (1), 103–108. <https://doi.org/10.1016/j.resuscitation.2006.08.007>.
- Robinson, S.M., Mackenzie-Ross, S., Campbell Hewson, G.L., Egleston, C.V., Prevost, A.T., 1998. Psychological effects of witnessed resuscitation on bereaved relatives. *Lancet* 352 (9128), 614–617. [https://doi.org/10.1016/S0140-6736\(97\)12179-1](https://doi.org/10.1016/S0140-6736(97)12179-1).
- Sak-Dankosky, N., Andruszkiewicz, P., Sherwood, P.R., Kvist, T., 2015. Factors associated with experiences and attitudes of healthcare professionals towards family-witnessed resuscitation: a cross-sectional study. *J. Adv. Nurs.* 71 (11), 2595–2608. <https://doi.org/10.1111/jan.12736>.
- Tudor, K., Berger, J., Polivka, B.J., Chlebowy, R., Thomas, B., 2014. Nurses' perceptions of family presence during resuscitation. *Am. J. Crit. Care* 23 (6), 88–96. <https://doi.org/10.4037/ajcc2014484>.
- Wacht, O., Dopelt, K., Snir, Y., Davidovitch, N., 2010. Attitudes of emergency department staff toward family presence during resuscitation. *Isr. Med. Assoc. J.* 12 (6), 366–370. <https://www.ncbi.nlm.nih.gov/pubmed/20928992> (accessed January 10<sup>th</sup>, 2017).
- Weslien, M., Nilstun, T., 2003. Family presence during CPR: the experiences and attitudes of code team members. *Nord. J. Nurs. Res.* 23 (1), 31–34. <https://doi.org/10.1177/010740830302300107>.