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Experiences of Obstetricians and Gynecologists in Teleconsultation with Medical Residents: A Qualitative Study

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Abstract

Objective: To explore the experiences of specialists, residents, and experienced personnel of obstetrics and gynecology regarding telephone consultation by specialized residents and on-call experts

Design: Qualitative study based on inductive content analysis.

Setting: Three departments of obstetrics and gynecology, affiliated to Mashhad University of Medical Sciences, Mashhad, Iran.

Population: A purposive sample of 16 specialists, residents and experienced staff.

Methods: Eighteen semi-structured interviews were conducted.

Results: Analysis of interview data resulted in 363 primary codes and six main themes including: “attempt to direct the process of telephone consultation”, “decision-making challenges of diagnostic-therapeutic plans for patients”, “attempt to verify the acquired findings”, “inefficacy in the face of life-threatening conditions”, “discriminations in legal confrontation with medical errors”, and “impact on emotions and personal life”.

Conclusions: Process of teleconsultation between physician and resident is associated with numerous challenges. Formal training sessions and considering new approaches of teleconsultation and telemedicine are needed to be implemented in order to reinforce the reliability of patient information transfer.

Keywords: telephone consultation, remote consultation, telemedicine, interprofessional relations, internship and residency, physicians

1. Introduction

1.1 Introduce the Problem

Medical consultations commonly take place through telephone communications (Haldis & Blankenship, 2002; Henn et al., 2012). Teleconsultation via communicative instruments requires virtual but responsible involvement of the supervising physician (clinical professor) to monitor the clinical decisions made by the regarding medical residents, especially in teaching hospitals. Such consultations are considered inherent to professional activities of every medical department (Wadhwa & Lingard, 2006).

A number of studies on physician-to-physician consultation have reviewed communicative problems (Beaulieu et al., 2009) or assessed tension in teleconsultation (Beaulieu et al., 2009; Wadhwa & Lingard, 2006). Also, some studies have evaluated the process of consultation at emergency departments (Cortazzo, Guertler, & Rice, 1993; Kessler, Kutka, & Badillo, 2012; Lee, Woods, Bullard, Holroyd, & Rowe, 2008) as well as the effects of interpersonal parameters (Chan, Sabir, Sanhan, & Sherbino, 2013). According to these studies, consultation process is principally influenced by the relationship between participants (Chan et al., 2013), and absence of proper communication in this process could decrease the quality of patient care and cause life-threatening side

effects (Matthews, Harvey, Schuster, & Durso, 2002; Ye, Mc, Knott, Dent, & MacBean, 2007).

Considering the extensive use of telephone consultation among experts and residents of teaching hospitals, as well as its significant impact on patient safety and outcomes, comprehensive research is required as to increase the global knowledge about this process. For this purpose, we applied a qualitative approach, which is the most appropriate method for the evaluation of subjects' experiences (Graneheim & Lundman, 2004). Via this method, we assessed the experiences of specialists, residents, and experienced personnel of obstetrics and gynecology regarding telephone consultation by specialized residents and on-call experts.

1.2 Research Background

Mashhad is the second capital city in Iran with three teaching hospitals of Imam Reza, Ghaem and Omolbanin affiliated to Mashhad University of Medical Sciences (MUMS) holding departments of obstetrics and gynecology. Obstetrics and gynecology specialists are usually present at the hospital during office hours (from 7:30 a.m. to 1:30 p.m.). However, after these hours (1:30 p.m. to 7:30 a.m.) and during holiday seasons and weekends, the main responsibility of patient care is taken by obstetrics and gynecology residents (junior and senior). If needed, residents consult on-call specialists via telephone to take a safer and more efficient action.

2. Method

This qualitative study was conducted based on inductive content analysis on the three departments of Obstetrics and Gynecology, affiliated to MUMS, Mashhad, Iran between July and November 2015

2.1 Samples

Participants were selected using purposive sampling, and sampling continued until data saturation occurred. Samples were selected with maximum diversity in terms of age and clinical experience. Inclusion criteria of the study were at least one experience of telephone consultation (in obstetrics and gynecology domain) and providing informed consent for participation.

2.2 Data Collection

Data were collected through interviews with 16 specialists, residents and experienced staff in these departments. Data collection tools were semi-structured open-ended interviews, prepared checklists, and observations recorded on field notes. Checklists consisted of questions regarding the characteristics of participants, original interview questions and complementary questions. The main research question was: "What is one of your experiences with telephone consultation? Please explain." Additional questions included: "Why did you choose this method of consultation?", "What were the results of telephone consultation?" and "How were you feeling during the telephone consultation?" Moreover, a blank space was provided in each checklist in order to record extra descriptions provided by participants. Checklists were designed using an explorative approach and reviewed by a panel of medical informatics and qualitative study experts. Face-to-face interviews were conducted individually at a comfortable setting chosen by participants. Initially, objectives of the study were explained to participants in order to create a friendly environment and acquire more information about each individual. After obtaining written informed consent, main research questions were asked. Participants were assured of confidentiality terms.

Other factors observed in interviews, such as subjects' emotions and non-verbal behaviors, were recorded in checklists. If any consultation occurred during the course of interviews, the content was recorded in form of field notes assuring the consent of the participant. Moreover, if data obtained from the first interview were ambiguous or required further explanation, complementary interviews were conducted.

All interviews were recorded using a recording device, and the digital media were transcribed word by word, using Microsoft Word.

2.3 Analysis

To encode, organize, and analyze the data, the files were entered in MAXQDA version 10. Simultaneous analysis of data was performed since the beginning of interviews and continued throughout the course of data collection. In the next stage, data were repeatedly reviewed by researchers, and answers provided by participants were divided into semantic units containing important information about telephone consultation.

The main themes of the study were specified using codes, and the review of interview transcriptions and codes was performed through the comparison of codes and integration of similar cases to form primary themes and sub-categories. In case of inconsistency, final themes were determined after discussion with the experts familiar with qualitative and consensus studies.

Validity and reliability of data were determined through checking codes with participants, observer reviews and

researcher's immersion in the study subject. To verify registered codes, participants reviewed part of the interview text with initial codes, and heterogeneity of extracted data was evaluated based on the opinion of participants.

For observer review, themes and sub-categories extracted from data were presented to experts familiar with qualitative research methods. These experts monitored the proportion rate of data, and consensus was achieved in this regard.

2.4 Ethical Considerations

The procedures used in this study led to no physical or psychological discomfort for participants. Before interviews, objectives and methodology of the study were clarified for participants, and they were assured of confidentiality terms, as well as their voluntary participation. Moreover, verbal and written informed consent was obtained from participants for every aspect, such as any voice recording or direct observations. Also, duration of interviews was determined based on the preference of participants to optimize the quality of data collection.

3. Results

This study was aimed to evaluate the experience of obstetrics and gynecology specialists regarding teleconsultation with residents during out of office hours and on-call days. In total, 18 interviews were conducted with 16 experts, residents and experienced midwives. In two cases where interviewees were not willing to be recorded on tape, only filed paper notes from the interview and their filled checklists were collected.

In addition, two interviews had to be repeated for additional clarification. Also, two consultations that occurred at the time of interviews were recorded. Each interview lasted for 20-45 minutes. Characteristics of interviews and interviewees are presented in Table 1.

Table 1. Characteristics of interviews and interviewees

Characteristics of interviews	Total time: 412 minutes*
	Total typed words: 19214
Characteristics of interviewees	No of experts: 9
	No of residents: 5
	No of midwives: 2

* For 16 recorded interviews.

Initial analysis of interview data resulted in 363 primary codes, 23 sub-categories and six main themes, as follows:

3.1 Attempts to Direct the Consultation Process

The first theme derived from data analysis in this study was "attempt to direct the process of telephone consultation". This theme consisted of 81 codes and five sub-categories, as follows: 1) attempt to start consultation; 2) compliance with terms of hierarchy at hospital; 3) mutual debate between resident and specialist to avoid medical errors; 4) complementary decision-making; and 5) simultaneous training during consultation.

If participating specialists were on-call, they expect phone calls from residents [C1101]. It is noteworthy that residents preferred to avoid telephone consultation during break times or after midnight [C1102]. Since specialists were aware of the negative impact of this parameter on patient status, they often tried to answer their phone using kind words such as "Yes, dear?" to start a comfortable conversation [C1103], but not all of them [C1104-5].

One of the demands of our specialists was compliance with terms of resident hierarchy in consultation [C1201]; however, under certain circumstances, junior residents had to contact the related specialist as well [C1202].

During consultation, specialists generally tried to reaffirm the discussed issues in order to highlight important points [C1301]. Following that, residents were asked to present their plan for the patient [C1302]. In case of any discrepancy, specialists attempted to discuss the matter with the active participation of resident [C1303-4].

In this stage, on-call specialists provided step-to-step guidance for junior residents [C1401-2] or offered complementary advice for guard residents [C1403-4] and were instructive [C1501] as emphasized by residents [C1502]. Some examples of extracted codes are shown in Table 2.

Table 2. Example of extracted Codes for the first theme

Sub - categories	*Example of extracted Codes*	*Code No.*
Attempt to start consultation [11]	Sometimes residents do not contact us (physicians) for a while, which makes us quite worried. (Specialist)	C1101
	Personally, we would prefer not to contact the specialist after midnight _from 12 a.m. to 5-6 a.m._ (Resident)	C1102
	I normally start the phone conversation using endearing words, such as "Yes dear?" or "Go ahead dear", to make the resident feel comfortable. (Specialist)	C1103
	It depends on the behavior of the staff. Sometimes, the specialist reacts with hostility if contacted over the phone, which makes the process of consultation quite difficult. (Resident)	C1104
	Some specialists humiliate the resident and look down on their skills in phone consultations. For instance, they say: "What year of residency are you passing that you ask me this question?" (Resident)	C1105
Need to comply with resident hierarchy at hospital [12]	Principles of health care organizations normally dictate that phone consultations be made by the guard resident. (Specialist)	C1201
	I had to make contact with the staff once when the guard resident was in the midst of a surgery. (Resident)	C1202
Mutual debate between resident and specialist to avoid medical error [13]	We frequently review the content of phone call with the resident to make sure no information has been missing by either of us. (Specialist)	C1301
	If the resident calls and asks for instructions for a patient, I initially ask for his/her expert opinion to prepare the patient plan. (Specialist)	C1302
	Even residents should take it upon themselves to scientifically discuss the patient plan with physicians since the plan offered by the staff is not always flawless. (Specialist)	C1303
	If the resident notices inconsistencies in the instructions given by the specialist, he/she should be allowed to question that decision by referring to scientific resources and asking "Why are you prescribing this professor?" (Specialist)	C1304
Complementary decision-making [14]	In case the phone consultation is carried out by junior residents, we consider a possible margin of error in the transferred description of patient. Therefore, we attempt to elicit more accurate information through repeated questions. (Specialist)	C1401
	It depends which resident (junior or senior) you are consulting with. If the phone consultation is made by junior residents, we tend to provide step-to-step guidance for patient examination so that they could perform it accurately. (Specialist)	C1402
	If the phone consultation is carried out by the guard resident, they provide us with a complete description of the patient and ask for further instructions on patient examination. As such, we only offer minor guidance. (Specialist)	C1403
	In most cases, guard residents ask for diagnostic approval, or to make sure their plan for the patient is effective. (Specialist)	C1404
Simultaneous training during consultation [15]	I ask questions like: "What did I diagnose?" and the resident says: "Termination of pregnancy". Then, I ask: "Why is it termination of pregnancy?" and the resident replies: "Because the patient has A and B conditions." This is how I make sure the resident fully understands my instructions. (Specialist)	C1501
	Out of 10 points, consultation was six points effective in acquiring our expert abilities. (Resident)	C1502

3.2 Decision-Making Challenges of Diagnostic-Therapeutic Plans for Patients

The most important theme inferred in this study was the challenges against preparing a diagnostic plan for patients.

This theme consisted of 134 codes and five sub-categories, as follows: 1) lack of confidence in the judgment of resident; 2) possibility of errors in decision-making; 3) communicative problems, 4) patient-related factors and 5) avoidance of / disagree with teleconsultation.

To make the most proper tele-decision about the patient, the specialist must be provided with accurate and complete information of the condition in progress. According to our observations, due to factors such as the presence of new conditions [C2101], uncertainty about findings [C2102], lack of confidence in the judgment of resident [C2103] and insisting of resident to persuade specialists about their own decision [C2104-5], it was challenging for physicians to make the most appropriate decision.

On the other hand, some on-call physicians believed that the majority of guard residents were not directly involved in patient examinations and only resorted to the existing information in patient files [C2106-7]. This finding was confirmed by daily observers of procedures at different wards [C2108], as well as a number of guard residents who described this issue as a negative professional experience [C2109].

In this study, despite efforts to make the most appropriate decision for the patient, we found several factors, which could increase the possibility of errors. Some of these factors were as follows: high volume of information communicated verbally by residents [C2201-2], high dependence of patient description on the character of resident [C2203] and its noticeable impact on the final decision of physician [C2204], older age of some specialists leading to lack of focus, especially after midnights [C2205] and deliberate errors made by some residents [C2206]. Other obstacles were disruption in telephone communication process [C2301] and environment-related factors [C2302].

Patient-related factors were among the most significant factors hindering accurate decision-making by the physician, such deliberate falsification of medical history by patient [C2401].

The aforementioned challenges caused some of our specialists to avoid teleconsultation and assert the presence of physician as the most effective method of patient care [C2501]. Some examples of extracted codes for the second theme are shown in Table 3.

Table 3. Example of extracted Codes for the second theme

Sub - categories	*Example of extracted Codes*	*Code No.*
Lack of confidence in the judgment of resident [21]	Residents might repeatedly come across a completely new situation, especially when it involves complications or, in our major, rare medical diseases. (Specialist)	C2101
	Sometimes I notice the uncertainty of the resident in his/her description or diagnosis of the patient. (Specialist)	C2102
	For instance, they might be mistaken on the exact weight of a neonate, which I am hardly able to know when I am not present at the hospital. For instance, the resident calls and says the neonate weighs four kilograms or has tight hips, which I cannot be sure of since I am not at the hospital. (Specialist)	C2103
	Sometimes, when we feel that the specialist is inclined towards cesarean for instance, we present the patient in a way that the physician feels obliged to prescribe cesarean. (Resident)	C2104
	In other words, I persuade the specialist to follow my plan through the way I present the condition of the patient. (Resident)	C2105
	Sometimes, even the guard resident confines the presentation of the patient to the descriptions recorded by junior residents and transfer it to the physician. (Specialist)	C2106
	Unfortunately, senior residents impose most of the responsibilities to junior residents and just read patient records. They do not visit patients themselves. (Specialist)	C2107
	Since guard residents may not examine the patient in person, they only transfer the information received from junior residents. In some cases, they might even confuse one patient with another. (Midwife)	C2108
	My phone consultations were only undesirable when I had not examined the patient directly and had only referred to the notes recorded by different residents. (Resident)	C2109

Possibility of errors in decision-making [22]	In some cases, the resident gives too many details on the phone, which makes you forget parts of the description. Sometimes, half an hour passes and he/she is still giving you descriptions. (Specialist)	C2201
	Occasionally, I may forget details of the patient condition since residents present many details and I do not have them recorded on paper. (Specialist)	C2202
	Outcome of telephone consultation largely depends on the personality of residents and the way they present the condition of patient to the physician. (Specialist)	C2203
	Presentation of the patient plays a pivotal role in the instructions we give residents over the phone. For instance, a resident might describe the condition of patient as critical and insist on it, while another resident might describe the same situation as moderate or even normal. (Specialist)	C2204
	We are mostly elderly, and residents call us at 2:30 or 3 a.m. for consultation. If so, I personally notice that my grasp of the matter has changed over time and have to ask the resident to repeat what she says. (Specialist)	C2205
	For example, they record TV reports mistakenly, and although they see it is 5 cm, they report it as 4 cm so it does not appear as lack of progress. This is how they transfer the information to the staff and mislead them as well. (Midwife)	C2206
Problems in communication with resident via phone calls [23]	Phone calls should be carried out in tranquil environments using proper devices in order to have focus and prevent miscommunication. (Specialist)	C2301
	Sometimes, we want to call the professor, but everyone is busy talking in the maternity wards and we cannot hear the conversation. Also, the connection might be interrupted. (Resident)	C2302
Patient-related factor [24]	There are times when patients give us false information on purpose. For example, this patient did not tell us about his cardiovascular disease history and sudden death of his brother due to the same condition. (Specialist)	C2401
Disagree with telephone consultation [25]	The best way is for the patient to be examined in the presence of physician. I visit the patient in the morning and make prescriptions, and it would be proper to do the same in the evening and at night. (Specialist)	C2501

3.3 Attempt to verify the acquired findings

Considering the aforementioned challenges against telephone consultation, specialists used different methods to ensure the accuracy of information. The current theme describes these methods consisting of 53 codes and four sub-categories, as follows: 1) enquiry through professional questions; 2) request for para-clinical documents of patients via the internet; 3) using the experience of nursing and midwifery staff and finally 4) presence of the physician at the hospital.

First and foremost, specialists tried to verify patient findings through asking residents specific questions [C3101] or requesting more patient-related information as fetal cardiotocography scans via email or mobile phone [C3201-3]. Furthermore, residents were occasionally encouraged to use the experience and skills of older midwifery staff for better judgment about the patients [C3301-2]. In some cases, physicians would enquire about the condition of patients from other experienced staff without knowledge of residents [C3303]. If needed, specialists would attend the hospital and examine patients directly [C3401-2]. Some examples of extracted codes for the third theme are shown in Table 4.

Table 4. Example of extracted Codes for the third theme

Sub-categories	*Example of extracted Codes*	*Code No.*
Enquiry through professional questions [31]	For example, to determine the weight, say 4 kilograms, I ask the resident: "Does the patient have late ultrasound? Or have you calculated the formula as well?" (Specialist)	C3101
Request for para-clinical documents of patients via the internet [32]	Viber was good for sending us traces that we needed. (Specialist)	C3201
	In some hospitals, we used to scan the traces and email them to the professor. Now, we take pictures with our mobile phone and send it over Viber or Telegram. (Resident)	C3202
	Sending images and scans of patients to physicians via the internet is a beneficial improvement in distant consultation. (Resident)	C3203
Using the experience of nursing and midwifery staff [33]	If there were other health care professionals around, I ask the resident on the line to consult them as well. (Specialist)	C3301
	In many cases, to determine the size of pelvic outlet for example, I ask the resident to call an experienced midwife. (Specialist)	C3302
	Even when they are in the operation room, sometimes I ask the expert midwife to inform if the mother and infant are okay, or how the bleeding sounds, without the knowledge of resident. (Specialist)	C3303
Presence of the physician at the hospital [34]	Finally, there have been several cases that we had to go to the hospital ourselves. (Specialist)	C3401
	Eventually, it is our presence and examination that matters most. (Specialist)	C3402

3.4 Inefficacy in the Face of Life-Threatening Conditions

Inefficacy in the face of life-threatening conditions was another theme reflected in the experiences of obstetrics and gynecology experts in telephone consultation. This theme consisted of 55 codes and three sub-categories, as follows: 1) insufficient experience and skills; 2) ineffective transfer of important details to physicians and 3) avoidance of consultation with the on-call specialist.

This theme was frequently evident with inadequate knowledge and experience of residents about the significance of small details [C4101]. Nevertheless, physicians were of the opinion that such problems and poor decisions, normally occurred within the early stages of guard residency [C4102-3]. Such example in this regard was the incidence of maternal and fetal complications due to negligence of residents towards detailed information of patient records [C4104] or incorrect transfer of them to the on-call professor [C4201].

Another contributing factor to this theme was the tendency of residents towards independent decision-making and avoidance of consultation with expert physicians as a result [C4301-3]. Some examples of extracted codes for the fourth theme are shown in Table 5.

Table 5. Example of extracted codes for the fourth theme

Sub-categories	*Example of extracted Codes*	*Code No.*
Insufficient experience and skills [41]	In one case during operation, I asked the resident: "Is there no problem at all? Like abnormal bleeding?" and she replied: "Only a little blood accumulates, doctor." When I went to the hospital, we cut open the abdomen and saw that the uterine artery had opened downwards. I told the resident: "You said there was no problem." And she replied: "There was only a little blood, which I thought was from the upper abdomen."	C4101
	The resident had just become guard and was not aware of the gravity of the condition, so she was ignoring it. (Specialist)	
	Errors mainly occur at the beginning of guard residency where there are more surgical complications. They may have problems with diagnosis and description, but gradually they become trained. (Specialist)	C4102

	Since residents are not frequently involved in decision-making during junior years, they may refrain from consultation and direct decision-making later on during senior years. It is because they only observe and do not grow accustomed to making decisions. (Specialist)	C4103
	Resident only knew that the patient had two previous C-sections, and without attention to presentation, took the patient to the surgery room. Then, she noticed the fetus was transverse, which made the operation difficult. Neonate was born with lower Apgar score and the incision was enlarged as well. (Specialist)	C4104
Ineffective transfer of important details to physicians [42]	In one case, ultrasound of the patient was indicative of ectopic pregnancy and abdominal fluid accumulation due to abdominal hemorrhage. However, the resident did not transfer this to me. (Specialist)	C4201
Avoidance of consultation with the on-call specialist [43]	Sometimes we want to test our skills and abilities, but there are also times when we cannot do this and have to consult. (Resident)	C4301
	Consultation is absolutely necessary in case of patients with complications, while it is only a waste of time with normal patients. (Resident)	C4302
	I believe that consultation is not necessary for all patients. Some patients are presented with simple conditions. (Resident)	C4303

3.5 Discriminations in Legal Confrontation with Medical Errors

Another theme extracted in the current study was inconsistency in legal confrontation with specialists in case of professional error. This theme consisted of nine codes and two sub-categories. Some physicians claimed the absence of legal grounds to apprehend residents in case of error; however, there are no measures as to confront professional errors made by residents [C5101, C5201-3]. Some examples of extracted codes for the fifth theme are shown in Table 6.

Table 6. Example of extracted codes for the fifth theme

Sub - categories	*Example of extracted Codes*	*Code No.*
Superficial attitude toward errors [51]	Unfortunately, we do not acknowledge errors of residents here. If they make errors, they have to be punished in any way. Although we have the legal right to do so, it cannot be done. (Specialist)	C5101
Superficial encounter with errors [52]	If the resident begs for forgiveness, he/she is easily forgiven. (Specialist)	C5201
	Usually, if the error made by the resident is insignificant, it is overlooked by authorities and we do not take it hard on the resident. (Specialist)	C5202
	But it is more in a verbal warning. In cases of very very very special cases, it is possible to extend the duration of residency. (Specialist)	C5203

3.6 Impact on Emotions and Personal Life

This theme consisted of 31 codes and four sub-categories. According to our findings, being on-call and patient care through long-distance consultation could have dramatic effects on the emotional and personal state of specialists. On-call specialists experience tremendous stress since they have to stay available [C6101] and alert with more stress [C6201-2]. As such, it was observed that physicians were anxious when contacted from the hospital [C6203] and had to tolerate the negative impact of this matter on different aspects of their personal life [C6301]. In several cases, stress and anxiety caused physicians to move their house or even their office [C6302]. Possible legal consequences, as well as moral issues, were observed to be involved in these cases [C6401-2]. Some examples of extracted codes for the fifth theme are shown in Table 7.

Table 7. Example of extracted codes for the sixth theme

Sub - categories	*Example of extracted Codes*	*Code No.*
Stay alert [61]	I take my phone everywhere I go and constantly check it to make sure I have network coverage. (Specialist)	C6101
Emotions on on-call days [62]	On-call days are really stressful. You do not even dare to move far from the hospital or have any special plans. (Specialist)	C6201
	When you are on-call, it is as if you are responsible for everything that happens in the ward. (Specialist)	C6202
	When I am on-call and have to respond to phone consultations, I become edgy and get high pulse rate every time I see the phone number of the hospital on my mobile phone. (Specialist)	C6203
Impact of family and professional aspects [63]	My whole family is affected when I am on-call because they might ask us to go to the hospital any minute. Evidently, all plans and schedules are affected by this. (Specialist)	C6301
	Our house, office and private hospital are in the vicinity of this hospital so that if residents call, we arrive as quickly as possible. Sometimes we arrive so quickly, even before the patient enters the operation room. (Specialist)	C6302
Legal and moral issues [64]	We always take legal matters into account when dealing with patients at the hospital. Of course, the most crucial matter is the life of the mother; at any rate, we are definitely preoccupied with legal matters in this major. (Specialist)	C6401
	Both moral and legal aspects of health care concern us, and legal matters account for 30% of our concern. (Specialist)	C6402

Frequency of extracted codes in each theme of the study is shown in Figure 1.

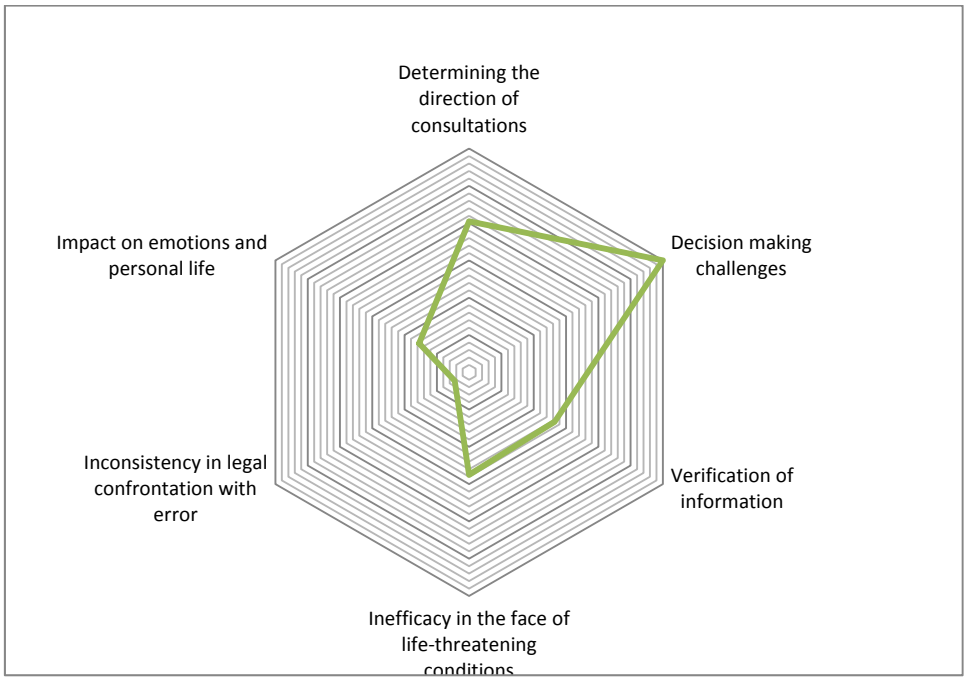

Figure 1. Frequency of extracted codes in each theme of the present study

4. Discussion

In the present study, we extracted six main themes mentioned above. To the knowledge of the authors, there are very few (or possibly no) qualitative studies, focused on resident – specialist telephone consultation.

During days of on-call duty, physicians had to stay alert and expect contacts from residents. They encouraged resident hierarchy in telephone consultation. In the literature, resident hierarchy has been reported as a major obstacle against seeking professional advice from specialists (Farnan et al., 2008). However, none of our participants complained of this matter.

Coordination in the process of patient care is an issue beyond the exchange of data and requires ultimate cooperation and coordination of the staff (Epstein, 1995). In the absence of specialists, such coordination must reach its peak in specialist–resident remote communication. According to previous studies, factors such as the fear of losing independence, revealing of poor knowledge and feeling of intrusion on behalf of the resident could turn into barriers against opting for telephone consultation (Farnan et al., 2008).

In one study, Naveh stated that to eliminate the hesitation of residents for consultation, they should be granted protection, and freedom for decision-making (Naveh, Katz-Navon, & Stern, 2015). In the present study, some specialists attempted to have conversations with residents in a stress-free environment for more effective communication.

Since phone counseling could lead to possible errors, our physicians were mainly focused on minimizing these errors. For instance, all phone conversations were carried out mutually using the recall technique to make sure residents did not miss any of the transferred content.

For junior residents, on-call physicians acted as step-by-step guides in consultations, while guard residents only received complementary advice on their suggested plans.

The most important finding of the current study was decision-making challenges of diagnostic-therapeutic plans for patients. In one research, Althubaiti (2013) claimed that during telephone consultation, factors such as the ability of resident to accurately describe patient status plays a pivotal role in the final decision of the on-call specialist (Althubaiti, Buntic, & Brooks, 2012). According to our participants, receiving accurate and complete information at the right time could largely influence the decision of specialists. However, several factors might challenge this process, such as resident fatigue, facing new clinical situations, some intentional errors and patient status fabrications. It is also noteworthy that many researchers emphasize the considerable effect of trust on the outcome of medical consultations (Chan et al., 2013; Wadhwa & Lingard, 2006). It has shown that familiarity and trust have considerable effect on consultation process (Chan et al., 2013). According to our findings, inadequate familiarity with the personality of residents could significantly affect the confidence of physicians in the residents' judgment and decision.

According to the other results of this study, some guard residents failed to transfer patient information accurately since they only referred to the reports of junior residents with lower experience. As confirmed by our specialists, this could adversely affect the quality of their decisions. Previous studies have also reported that even well-trained residents had inconsistency in reporting patient status, which influenced the judgment of specialists (Thapa, Shrestha, Shrestha, & Giri, 2013).

In the current study, specialists stated that presentation of patient status largely depends on the character of residents, environment-related and underlying factors. Therefore, various methods have been proposed by physicians to ensure the accuracy of resident reports, such as repeated enquiry with specialized questions, electronic review of patient records, encouragement of residents to seek professional advice from experienced staff and finally the physical presence of physician at the hospital.

One of the main themes in the present study was "inefficacy of in the face of life-threatening conditions". This was often caused due to insufficient knowledge of residents about the significance of seemingly small details, as well as lack of tendency to consult specialists hoping to achieve independence in decision-making. It should be noted that inadequate skills and knowledge of residents, as well as their overload of patient care responsibility, could cause them to make professional errors occasionally (Naveh et al., 2015; Peets & Ayas, 2012).

Factors such as lower independence of residents, more frequent consultation with on-call specialists and higher level of knowledge about medical resources could result in fewer errors by residents (Naveh et al., 2015). In addition, experience level of residents has a significant correlation with the rate of errors. Previous studies have indicated error rate to be higher among residents at the beginning of residency period compared to one at the end (Kozer et al., 2002). This finding was confirmed by the participants in the current study.

Another theme of the current study was "inconsistency in legal confrontation with errors of specialists compared to residents". Accordingly, although there are laws to deal with residents who make professional errors, physicians may not face equal reproach in this regard.

Furthermore, we observed that being on-call could lead to tremendous stress and anxiety in specialists, and this could adversely affect different aspects of their life. Major concerns of specialists in this regard were associated with moral and legal consequences of their clinical decisions.

4.1 Strengths and Limitations

Our qualitative approach as the most appropriate method for the evaluation of subjects' experiences led us to extract the experiences and opinions of telephone consultation parties. Additionally, participants were interviewed across obstetrics and gynecology departments by two experts in qualitative studies who were trained in the conduct of interviews.

Despite the fact that requests of interview were sent to all potential participants, almost half of these experts did not take part in the study. Therefore, findings of our study could not represent the views of all experts. Moreover, it is possible that interviewers influenced the process of data collection by directing the responses of participants towards their personal inclinations. Nevertheless, the methodology and prominent extracted themes of the study could diminish the possible unreliability of data. In summary, although information obtained in the present study may not be of absolute certainty, it could pave the way for further research.

5. Conclusion

According to the results of this study, process of teleconsultation between physician and resident is associated with numerous challenges. Professional communication between medical staff plays a pivotal role in appropriate patient care, and formal training sessions in this regard seem necessary to reduce the rate of medical errors. Furthermore, considering the relatively low confidence of physicians in the accuracy of information transferred by residents over the phone, new approaches of teleconsultation and telemedicine need to be implemented in order to reinforce the reliability of patient information transfer. In this regard, a research in the form of PhD thesis is in progress at the informatics department of MUMS, the results of which will soon be published.

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Competing Interests Statement

The authors declare that there is no conflict of interests regarding the publication of this paper.

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