RESEARCH ARTICLE

Entrustment in plastic surgery residents' informed consent taking for elective surgical procedures: A modified Delphi study

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Abstract

Objective: To identify the competencies regarding entrustable professional activities among postgraduate plastic surgery residents for informed consent taking before any elective surgical procedure and to choose the appropriate assessment strategies.

Method: The Modified Delphi study was conducted from July 2022 to January 2023 after approval from the ethics review committee of the Islamic International Medical College, Islamabad, Pakistan, and comprised two iterative rounds using the expert consensus approach involving consultant plastic surgeons serving in public, private and military teaching hospitals in Pakistan and abroad. Following literature search, competencies related to informed consent before elective plastic surgery procedures were identified. A 5-point Likert scale was formulated and the document was distributed online. Items reaching consensus level were included in the final document. The competencies that failed to reach the consensus level or needed amendments were sent in the second round along with additional questions regarding assessment strategies and supervision level. Data was analysed using SPSS 21.

Results: Of the 51 plastic surgery consultants, 30(58.8%) responded in the first round. Out of 58 competencies initially identified, 49(84.5%) reached consensus level. No new entrustable professional activities or competencies were identified. Of the 9 competencies in the second round, consensus was achieved on 6(67.7%), with the response rate being 70%. The final set comprised 55 competencies under 8 entrustable professional activities.

Conclusion: The entrustable professional activities identified provide a comprehensive competence-based assessment framework for taking informed consent in plastic surgery practice.

Keywords: Plastic surgery residency, Entrustable professional activities, EPAs, Informed consent taking.

(JPMA 75: 1709; 2025) **DOI: https://doi.org/10.47391/JPMA.21729**

Introduction

Taking informed consent is a legal practice to ensure patients have sufficient information about their diagnosis and prognosis. Particularly, in plastic surgery, many treatment options are directed towards improving the quality of life (QOL). This necessitates spending enough time with the patient to understand his/her expectations and desires regarding best treatment options suitable. As this field of surgery is related more to QOL improvement than life-saving, the patients' expectations are also high. This puts the plastic surgeons at a relatively vulnerable position for litigations or malpractice claims.[1]

With the advances made in medical education in recent years, the element of informed consent taking is considered a part of core competencies to be learnt by medical students and residents.[2] Despite its importance, usually the junior most resident is assigned to undertake this complex task. Formal teaching and methods to assess this competence are also lacking. The majority of residents learn it by observing their peers.[3] This makes the process less standardised as different peers or consultants have varying approaches in this regard. Best practices in a resident's education for informed consent require that it should be fairly outlined and incorporated into the formal teaching programme.[4]

Competence-based medical education (CBME) has proved to be an educational innovation that has been promptly embraced as a leading practice in postgraduate residency training worldwide.[5] In this system, generally a specific competence is assessed without providing an overall outlook of resident's performance. A resident may be equipped with a given set of competencies, but whether or not he/she is proficient to integrate them across specific tasks essential for competent performance, still remains a critical question. These issues warrant that for an effective training and its assessment, an approach which integrates multiple competencies and takes on a holistic approach would be more suitable. The notion of entrustable professional activities (EPAs), a comparatively new competence-based assessment framework, associates competencies to practice along with meaningful

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Submission complete: 06-09-2024 **1st Revision received:** 11-02-2025

Acceptance: 02-08-2025 **Last Revision received:** 01-08-2025

assessment of the capabilities and progress of students.[6]

The current study was planned to identify the EPA competencies among postgraduate plastic surgery residents in terms of knowledge, skills and attitude related to informed consent taking before an elective surgical procedure, and to choose the appropriate assessment strategies for the identified EPAs along with their supervision level at the end of residency training.

Materials and Methods

The Modified Delphi study was conducted from July 2022 to January 2023 after approval from the ethics review committee of the Islamic International Medical College, Islamabad, Pakistan, and comprised two iterative rounds using the expert consensus approach involving a sample raised using purposive sampling technique of consultant plastic surgeons serving in public, private and military teaching hospitals in Pakistan and abroad having minimum teaching experience of 5 years after taking informed written consent from each participant. Those who were not involved in resident teaching in the preceding 5 years, and those not willing to participate were excluded.

In stage 1, a thorough literature search was carried out to identify various competencies and assessment strategies for postgraduate plastic surgery education related to informed consent. Numerous national and international postgraduate curricula and literature on learning outcomes and competencies in plastic surgery were searched, including those of the College of Physicians and Surgeons Pakistan (CPSP), the American Council of Graduate Medical Education (ACGME) and the General Medical Council (GMC).[7,8] A questionnaire containing the identified competencies, grouped under EPAs, was prepared. Assessment strategies were also identified.

In stage 2, content validation of the questionnaire was done by sending it to 3 plastic surgeons and 2 medical educationists enrolled using convenience sampling technique. The participants found the questionnaire to be clear, plausible and specific to the study objective. Minor modifications were carried out in the light of the feedback.

In stage 3, two rounds of Delphi were conducted. The questionnaire was disseminated through WhatsApp mobile application. The questionnaire used a five-point Likert scale, ranging from "not at all important" to "very important". Additional space was provided at the end of each question for the participants for feedback, including the suggestion of any additional EPAs or competencies. For both rounds, agreement among ≥80% participants ("important" or "very important") with median ≥4 and interquartile range (IQR) ≤1was taken as a mark of consensus.

After the first round, all the items that either did not reach consensus in the first round or were rephrased according to the suggestions of the respondents were grouped together in a second questionnaire that was sent to the same set of consultants. They were requested to opt for relevant assessment strategies for each EPA (more than one option could be chosen). Expanded EPA entrustment and supervision scale, ranging from level 1 to level 5, was also provided to ascertain the desired supervision level for the respective EPA for each year of plastic surgery residency training.

The study was concluded once the consensus had been achieved at the end of second round. Data was analysed using SPSS 21. The stability factor was calculated using the McNemar change test by comparing responses of successive rounds. Change of responses from one round to the other were assessed using chi-square test. $P<0.05$ suggested instability, meaning change of responses between the rounds, while $p>0.05$ showed consistent results with response stability.

Throughout the study, anonymity was maintained to avoid individual dominance and potential bias. The participants were asked for controlled feedback to reduce bias by giving opinions based on personal beliefs or extreme events.

Results

At the end of stage 1, 60 competencies were identified under 8 EPAs. Of them, 2(3.3%) competencies were deleted in stage 2. In the first round of stage 3, the questionnaire was sent to 51 plastic surgery consultants (Table 1). Of them, 30(58.8%) responded. Out of the 58 competencies identified, 49(84.5%) reached consensus level. No new EPAs or competencies were identified by the consultants. Of the 9 competencies in the second round of stage 3, consensus was achieved on 6(67.7%), with the response rate being 70% (35.7) (Figure), confirming methodological consistency and rigour. The 3(33.3%) competencies excluded were: 'Explains the role of different members of the operating team, like who will be harvesting the flap and who is going to be responsible for wound closure etc.'; 'Can compare the options based on advantages and disadvantages'; and 'Can compare the options based on cost, like artificial dermis versus skin graft alone for defect

Table-1: Characteristics of the participants in Delphi rounds.

Designation	Years of teaching experience	Place of practice
Professor=8	>20 years=05	Pakistan=24
Associate professor = 7	11-20 years=13	USA=1
Assistant professor = 15	5-10 years=12	Europe=3
		Rest=2

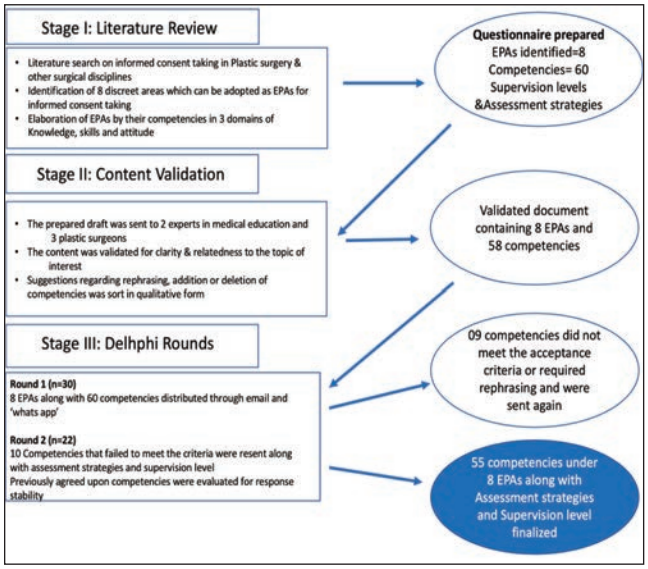

Figure: Stages of the study.

reconstruction'. In the qualitative comments, the experts thought that these competencies did not qualify for the entrustment of informed consent taking.

The final set comprised 55 competencies under 8 EPAs. The 8 EPAs were: The resident tailors the communication to the patient's personal context; Discusses the elective surgical procedure planned; Discusses the alternate options of treatment; Discusses the postoperative course; Explores the patient's preferences; Takes a well-argued decision with the patient; Discusses the future implications of the procedure; and, The resident is able to identify and deal with potentially problematic patients.

Various assessment strategies for each EPA were also ranked, with the short version of Clinical Evaluation Exercise (Mini-CEX) and 360^{O} feedback being recommended for all the 8(100%) EPAs, followed by Task-Oriented Assessment of Clinical Skills (TOACS), logbook review and multiple-choice questions (MCQs)/extended matching questions (EMQs) (Table 2). The recommended level of supervision for each academic year of residency was also noted (Table 3).

The response stability of Round 2 compared to Round 1 was confirmed (p>0.05) for all items except 1 (p=0.039). The overall value of Cronbach's alpha was >0.70. It was 0.964 for round 1 and 0.777 for round 2.

Discussion

Informed consent taking for elective procedures in plastic surgery is a complex process that needs command of knowledge, communication skills, and certain attitude

Table-2: Assessment strategies identified for each EPA.

	EPA 1	EPA 2	EPA 3	EPA 4	EPA 5	EPA 6	EPA 7	EPA 8
Mini-CEX	54.2% (16.26)	47.3% (14.19)	51.2% (15.36)	33.9% (10.17)	42% (12.6)	47.7% (14.31)	43.1% (12.93)	38.1% (11.43)
360^{O} Feedback	20.8% (6.24)	12.7% (3.81)	14.0% (4.2)	14.3% (4.29)	20% (6)	20.5% (6.15)	13.7% (4.11)	23.8% (7.14)
TOACS	0 % (0)	25.5% (7.65)	30.23% (9.07)	26.79% (8.03)	18% (5.4)	0% (0)	0% (0)	26.2% (7.86)
MCQs/EMQs	0 % (0)	9.1% (2.73)	0% (0)	19.6% (5.88)	18% (5.4)	0% (0)	13.7%(4.1)	7.1% (2.1)
Logbook review	4.2% (1.26)	5.5% (1.65)	4.7% (1.41)	5.4% (1.62)	2% (0.6)	4.5% (1.35)	0 %(0)	4.8% (1.4)

EPA: Entrustable professional activities, CEX: Clinical evaluation exercise, TOACS: Task-oriented assessment of clinical skills, MCQs: Multiple choice questions, EMQs: Extended matching questions.

Table-3: Proposed supervision levels according to residency year.

Year of residency	Level of supervision	EPA 1	EPA 2	EPA 3	EPA 4	EPA 5	EPA6	EPA7	EPA8
1	1	0	0	0	0	0	0	0	0
	2	70% (21)	70% (21)	66% (19.8)	73% (21.9)	80% (24)	85% (25.5)	90% (27)	90% (27)
	3	23% (6.9)	30% (9)	23% (6.9)	13% (3.9)	10% (3)	15% (4.5)	5% (1.5)	5% (1.5)
	4	7% (2.1)	0	11% (3.3)	14% (4.2)	10% (3)	0	5% (1.5)	5% (1.5)
	5	0	0	0	0	0	0	0	0
2	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0
	3	90% (27)	92% (27.6)	92% (27.6)	96% (28.8)	92% (27.6)	97% (29.1)	91% (27.3)	92% (27.6)
	4	10% (3)	8% (2.4)	8% (2.4)	4% (1.2)	8% (2.4)	3% (0.9)	9% (2.7)	8% (2.4)
	5	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0
	3	0	3.3	3.3	0	0	0	0	0
	4	93.3% (27.99)	96.7 (29)	96.7 (29)	100 (30)	100 (30)	100 (30)	100 (30)	100 (30)
	5	6.7% (2.01)	0	0	0	0	0	0	0

EPA: Entrustable professional activities.

traits. To devise EPAs for informed consent taking is a step towards patient safety and improvement of quality of care. The current study used the Modified Delphi method, which is more targetted than a survey as it helps in reaching a consensus by engaging professionals without letting them influence each other. The Delphi technique has so far been used successfully in medical and surgical education by numerous researchers.[8-10] It has been employed for identifying key competencies, designing and validating EPAs, and in other aspects of curriculum development at postgraduate and undergraduate medical and paramedical education levels.[11-13]

There are various designs and modifications of the Delphi technique available in the literature.[14] The current study used Modified Delphi in which the questionnaire was based on an extensive literature review. As there were no previously available EPAs or predefined competencies related specifically to the informed consent taking of plastic surgery residents, guidance was sorted from different publications pointing towards components of informed consent.[15,16] Comment boxes were provided with every question for any suggestions regarding modification or addition/removal of a competency. As the expert panel comprised senior plastic surgeons, the paucity of time and their relative unfamiliarity with the concept of EPAs forced the researchers to take help from a predefined set of components and competencies. The preliminary set of EPAs for round 1 was developed after a thorough document analysis, and grouping and arranging of competencies under meaningful tasks.

Flexibility exists in the Delphi design as there are no formal, universally agreed guidelines on the use of the technique, methodology standardisation, number of experts, number of rounds, consensus criteria for selection of experts, etc.[17] Studies have used Delphi/Modified Delphi technique to develop specialty-specific EPAs, including anaesthesia, surgery, neonatology, radiology and internal medicine. Most of these studies are focused on the development of the initial step of identifying the core list of EPAs.[18] A few studies have focussed on the development of specific competencies under the core EPAs.[12] The current study reached a consensus on eight EPAs with their respective set of competencies and assessment strategies for postgraduate plastic surgery residents.

There is no clear guideline on the definition and number of experts for a Delphi study in literature.[19] The number of experts varies from 3 to several hundred in different studies.[16] A few studies have found that increasing the number of experts beyond 30 might not have a substantial effect on the results.[20] Larger sample sizes can provide diminishing returns regarding the validity of the findings. Moreover, a Delphi design depends more on group dynamics in reaching consensus than their statistical power. The current study used purposive sampling technique to invite qualified consultant plastic surgeons with a minimum teaching experience of 5 years, serving in public, private and military institutions within the country and abroad. This ensured representation from all major plastic surgery units in Pakistan. In round 1, the response rate was 62.7% which increased to 70% in round 2. The response rate in literature for Delphi studies varies between 45% and 100%.[21]

Delphi studies often use a certain level of agreement and/or descriptive statistics to quantify consensus amongst the expert. In the current study, three types of measurements were used, including percentage agreement, median and interquartile range (IQR), applying the following criteria for consensus for inclusion; ≥80% of participants' agreement in the top 2 ratings (very important and important), median score ≥4 and IQR ≤1 on a 5-point Likert scale in rounds 1 and 2. Although studies have used ≥50% agreement as criterion for acceptance, a higher score will improve the rigour of the study.[22]

The final set of 8 EPAs included the ability to identify potentially problematic patients. Other studies have also shown that failure to recognise the red flags, or having unrealistic expectations can take a disastrous turn.[23]

Plastic surgery training in Pakistan spans almost 3 years after 2 years of core surgical training. The current EPAs were developed for all 3 years plastic surgery training, providing visible and quantifiable activities that can be associated with the objectives of the existing plastic surgery curricula. As these EPAs are adopted by different residency programmes, further work and insight will help determine their educational strategies and instructional tools. The use of EPAs can also improve the trainee-supervisor interaction as many of the assessment methods used to assess EPAs rely on direct observation. This will help in building the resident's confidence, and eventually the patient's trust in future leaders in plastic surgery. However, the current situation in plastic surgery residency training suggests that incorporating the EPAs will require faculty training and development.

The current study has limitations as it focussed only on content validity, which limited the validity evidence. Besides, the validation of the EPAs in actual training practice was not explored.

Conclusion

There was an expert consensus on 8 EPAs with 55 competencies in the domains of knowledge, skills and

attitude, supervisory levels and assessment strategies for informed consent taking for elective procedures in plastic surgery. These EPAs will help improve the plastic surgery resident's ability to take consent. It will also allow the supervisors and programme directors to confidently entrust their residents and future consultants with the task of taking informed consent.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

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Author Contribution:

AA: Concept, design, data analysis, interpretation and drafting.
MH: Data collection and analysis.
HF: Cross checking the data and input in discussion part.