



RESEARCH ARTICLE

COMPARISON OF THE VIEWPOINT GROUPS AMONG PROFESSIONALS OF PERIOPERATIVE SETTING IN PRIORITIZATION OF ANTECEDENTS OF THE INTERDISCIPLINARY COLLABORATION USING MODIFIED Q-METHODOLOGY

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ABSTRACT

Background: Continued concerns for improvements in safety and quality of the perioperative setting (PS) process and outcomes drive the efforts in improving the interdisciplinary collaboration (IC) to match or supplant the change brought by innovation with better reflexivity through planning. PS professionals routinely engaged in surgery and recovery hold the prime insights into the active process of ICPS and are best capacitated to articulate their perspectives and priorities.

Purpose: The purpose of this research was to describe the patterns of ICPS factor prioritization within the interdisciplinary team (IDT). The questions guiding this research were:

1. What antecedents of IC are considered by IDT professionals to be important in PS?
2. What viewpoints and potential contentions exist in prioritizations of IC improvements?

We have utilized a modified Q-methodological approach to assess the subjective viewpoints within IDT professionals.

Materials and Methods: This research is based on mixed-methods survey design with modified Q-methodology adapted for utilization in a statistical platform, such as SPSS. Qualitative theme extraction from literature review (LR) was utilized in selection ICPS factors for inclusion into the concourse of statements, which from the Q-sample was induced. ICPS factor Q-sort was obtained from participant responses in 12x12 prioritization matrix built into a survey in REDCap. The viewpoint groups were then identified with factor analysis of the rotated (rows-columns) matrix and subjected to further analysis of concordances and discordances.

Results: Five primary factors of ICPS as identified by IDT members include: Critical Communication and Feedback (CCF), Purpose, Team Technical Competence (TTC), Trust, and Adaptability. Cumulative 94.672 % of variance was explained with eight viewpoint groups with eigen values greater than 1.0. and factor loadings greater than 0.30 in the Q-FA model. Eight viewpoint groups included: Technocratic, Polarized-reflexive-visionary, Collegial, Communicator, Focused on Critical Process, Power-Observant (conscious of power dynamics), and Task-Oriented. The ninth viewpoint group included Absolutist viewpoints (16.67% of P-set).

Conclusions: In this study, we were able to identify the primary factors important in improving ICPS and the viewpoint groups and patterns using modified Q-methodologic approach. Identification of potential sources of contention and dispute are necessary for IDT reflexivity and adaptability in innovative environment of PS.

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INTRODUCTION

Concerns for safety in the resource-constrained present-day perioperative setting (PS) enhance the need for improved

collaborative efforts within interdisciplinary teams (IDT). The innovation in the increasingly technologically complex and rapidly evolving surgery and surgical recovery is placing additional demands on team adaptability by infusing new tasks and roles, and new sources of potential contentions influencing the interactions within the teams. Continued concerns for improvements in safety and quality of the process and

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outcomes drive the efforts to match or supplant the change brought by innovation with better reflexivity through the interdisciplinary collaboration (IC) and planning. Effective interdisciplinary team (IDT) collaboration facilitates critical decision making. Critical decision making (CDM) improvements are evident in congruent priority setting, reduced variance, improved decision validity, and increased decision support (Turcotte *et al.*, 2015). While important safeguards have to be maintained to avoid groupthink, where the accurate minority opinion is subjugated to inaccurate majority opinion, Bergman *et al.* (2012) point to the importance of the intragroup socioeconomic conflict and task dimension in the intragroup decision-making conflicts. Bergman *et al.* (2012) pointed from literature review to the negative relatedness of the socioeconomic conflict with performance and job satisfaction and task conflict to decision quality and performance and satisfaction. Therefore, the conflict in healthcare and perioperative setting is a phenomenon to be recognized and described further for development of an approach to conflict management. Leadership fostering safety culture is thought to have the following features: assigning greater priority to safety over other organizational goals, challenging existing views about causes and remediation in error analysis, supporting positive interactions, balancing individual accountability and responsibility without assigning blame, motivating and inspiring (Anderson and Kodate, 2015). PS professionals routinely engaged in surgery and recovery hold the prime insights into the active process of ICPS and are best capacitated to articulate their perspectives and priorities. Analysis of perceptions of the perioperative IDT members necessitates utilization of Q- methodology due to anticipated diversity of the interdisciplinary perspectives. Q-methodology employs mixed qualitative and quantitative techniques that have evolved from factor analysis and are being developed to assess subjective opinions and perceptions (Akhtar-Danesh *et al.*, 2013; Brown, 2014). Q-methodology is described as the means of studying distinctive “dimensions of subjective phenomena” and commonalities among persons with similar viewpoints “reflective of perspective intrinsic to the individuals” (Lai *et al.*, 2006). In clinical setting, Q-methodology has been utilized in analyses of perceptions and opinions of patients, healthcare providers, and in training of healthcare professionals. More notable of the later studies utilizing Q-methodology include analysis of patients’ perceptions about fatigue in adolescents with cancer (Lai *et al.*, 2007), head and neck cancer patients’ experiences with tube feeding (Merrick *et al.*, 2012), patient experiences with chronic pain (McParland *et al.*, 2011), and healthcare priorities (Baker *et al.*, 2014; Paige and Morin, 2016). The objectives of this research were develop an approach in describing the significant patterns of ICPS elements and to analysis of the differences in viewpoints within IDT of PS using modified Q-methodologic approach.

Specific Aim: Analysis of differences in priority setting within idt in perioperative setting

Hypothesis: Significant subjective differences exist among IDT professionals in priority setting in improving ICPS.

MATERIALS AND METHODS

University of Mississippi Medical Center IRB exempt approval was obtained prior to commencement of data

collection. Data collection was based on survey designed for online administered via Research Electronic Data Capture (REDCap) platform with the instrument containing items assessing ICPS as described below. REDCap survey platform is developed by the REDCap Consortium, hosted by Vanderbilt University (REDCap, 2014). REDCap is an open-source application created and maintained for academic use with multi-site access that allows secure web-based survey administration. Its features include branching, skip logic, survey stop action, calculated fields, and continuous scale option for item response. REDCap supports project management and reporting and data export for analysis in Microsoft Excel, PDF, SAS, Stata, SPSS, and R (REDCap, 2014).

“Study data were collected and managed using REDCap electronic data capture tools hosted at [UMMC].1 REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies, providing 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources.” (Harris *et al.*, 2009).

Procedure

Data were collected by survey administration from 10/07/2017 to 11/01/2017 among the perioperative professionals attending educational conferences and meetings within areas of Central Alabama, Mississippi, and Louisiana who volunteered to participate. The data were obtained from the survey responses in RedCAP. Forty-four (44) survey records were obtained, two had to be excluded not meeting study inclusion criteria. Responses from the medical students (3rd and 4th year) were included as they are the professionals in training with an active role in IDT of academic medical centers. Thirty-two (32) mostly or entirely completed surveys were included for the statistical analysis for objectives II and III. The survey questionnaire was accessible from a personal computer or a cellular telephone device with access to the internet for participant convenience. However, most participants preferred the paper version of the instrument for later input into REDCap survey by study personnel. Multiple entries were disallowed in electronic format on several items, specifically type of surgery of reference in responses. In addition, the option of assigning the same level of priority to more than one item had to be allowed due to response trend in the paper version of the survey format. Q-methodology was utilized using a survey administered online and available in paper format for PS professionals. The concurrence of statements about important ICPS antecedent factors was induced from LR by identification of representative themes in IC descriptions and convergent teamwork theories and instrument development. The concurrence was deduced into the Q-sample of twelve factors in improving ICPS that were included in a prioritization matrix in the survey.

The Q-sample included:

CCFCritical Communication and Feedback
 SEShared Expertise
 SSAShared Situational Awareness
 RAReflexivity for Adaptability

SCDPCShared Critical Decision-Making and Problem-Solving Capacity
 TTCTeam Technical Competency
 PCMProcess Coordination and Management

BTDAutocratically/Democratically Balanced Team Dynamics
 In addition, the Q-sample included Adaptability, Fairness in distribution of rewards and risks, Sense of Trustwithin IDT, Shared Purpose.Thus, the Q-sample consisted of concepts and short phrases familiar to perioperative professional team. The direction of the Prioritization Matrix Scale included in ICPS Questionnaire was: “PLEASE RANK THE FOLLOWING ELEMENTS BY THEIR IMPROTANCE IN IMPROVING COLLABORATION. Rank 1 - for the highest priority; rank 12 - for the lowest priority”. Obtained participant responses were validated to include those meeting study inclusion criteria into a P-set. Participant responses were validated to include those meeting study inclusion criteria into a P-set. The differences among priority-setting viewpoint groups were further analyzed using FA extraction and rotation techniques.Q-sort was obtained from participant responses using the factor analytic package in SPSS.

Statistical analyses

The prioritization matrix was rotated with rows being Q-sample phrases (ICPS factors) and columns – participant coded records.Q-methodologic statistical analytic techniques are based on Q (Quantum) factor analysis (QFA) correlation measures were utilized in analysis of data from survey responses. Generally, factor analysis (FA) is built on the basis of Pearson product moment correlations. The assumptions of FA are similar to those of Pearson correlations, though some are relaxed. Adequate sample size and continuous distribution are assumed. The assumption of distribution normality is relaxed in QFA.

rank (column) were allowed. Rank-ordering instead of ranking is a critical step in Q-sorting (Paige & Morin, 2016). The reliability of Prioritization Scale (N=12 items) was sufficient as measured with Cronbach alpha of 0.860 and 0.893 in split half testing (N=6+6). Q-sort of the important factors in improving ICPS was constructed from the mean prioritization scores obtained in SPSS descriptive analysis. The following ICPS antecedent were identified in Q-sort from the estimated mean priorities as assigned by participants:

CCF, Shared Sense of Purpose, TTC, Trust, and Adaptability were the top five factors assigned higher priority in improving ICPS by the estimated means from all responses. The input matrix of the dataset from the Priority SettingScale was rotated, by switched rows (participant input records) and columns (assigned priorities).The viewpoint groups were then identified with Q-factor analysis using Principal Component Analysisin SPSS.

Table 2. ICPS output for Q-sort of the antecedents of ICPS.in the order of IDT mean priority

Priority	Factor	Mean	Std. Error	Median
1	Critical Communication and Feedback (CCF)	3.68	0.757	2
2	Purpose	4.53	0.747	3
3	Team Technical Competence (TTC)	4.55	0.639	4
4	Trust	5	0.707	5
5	Adaptability	5.22	0.831	4
6	Shared Situational Awareness (SSA)	5.42	0.77	5
7	Share Expertise (SE)	5.5	0.78	5.5
8	Process Coordination and Management (PCM)	5.52	0.679	5
9	Shared Critical Decision Making and Problem Solving Capacity (SCDPC)	5.55	0.651	5
10	Reflexivity-adaptability (RA)	5.74	0.742	5
11	Balanced Team Dynamics (BTD)	6.24	0.707	6
12	Fairness	7.19	0.872	7.5

Table 1. SPSS output for descriptive statistics for IDT-assigned priorities in antecedents of ICPS

		Statistics											
		CCF	SE	SSA	RA	SCDPC	TTC	PCM	Adaptability	BTD	Fairness	Trust	Purpose
N	Valid	25	20	19	23	20	20	25	18	21	16	21	19
	Missing	13	18	19	15	18	18	13	20	17	22	17	19
Mean		3.68	5.50	5.42	5.74	5.55	4.55	5.52	5.22	6.24	7.19	5.00	4.53
Std. Error of Mean		.757	.780	.770	.742	.651	.639	.679	.831	.707	.872	.707	.747
Median		2.00	5.50	5.00	5.00	5.00	4.00	5.00	4.00	6.00	7.50	5.00	3.00
Mode		1	1	1 ^a	2	4	1 ^a	5	4	4	3 ^a	1 ^a	1 ^a
Std. Deviation		3.783	3.487	3.355	3.558	2.911	2.856	3.393	3.524	3.239	3.487	3.240	3.255
Variance		14.310	12.158	11.257	12.656	8.471	8.155	11.510	12.418	10.490	12.163	10.500	10.596
Skewness		1.460	-.062	.350	.255	.968	.387	.485	.591	.428	-.136	.468	.681
Std. Error of Skewness		.464	.512	.524	.481	.512	.512	.464	.536	.501	.564	.501	.524
Kurtosis		.601	-1.691	-.881	-1.287	.104	-1.003	-.596	-1.020	-1.146	-1.633	-1.042	-.409
Std. Error of Kurtosis		.902	.992	1.014	.935	.992	.992	.902	1.038	.972	1.091	.972	1.014
Minimum		1	1	1	1	2	1	1	1	2	2	1	1
Maximum		12	10	12	12	12	10	12	12	12	12	11	12

a. Multiple modes exist. The smallest value is shown

RESULTS

Modified Q-methodology with FA in SPSS was utilized for analysis of patterns and congruences of perceptions among and between the subjective opinion groups. Q-sample statements were included in ICPS questionnaire prioritization matrix. The participants were asked to rank-order the statements from 1 (the highest) to 12 (the lowest), where multiple answers per

Eight viewpoint (opinion) groups with eigenvalues >1 and Q-factor loading of greater than 0.3 were identified in a PCA extraction in the analysis of differences among the participant responses in assigning priority. Eight groups of records with distinct viewpoints were identified with Q-methodologic FA with PCA extraction. In this model, 94.672% of variance in opinions was explained by these groups. Better component orthogonality was achieved with Oblimin rotation with Kaiser Normalization in SPSS.

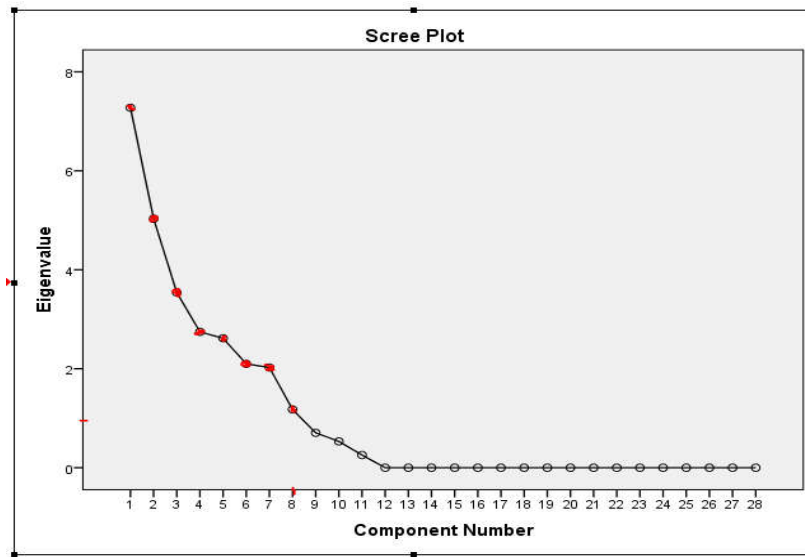


Figure 1. Scree Plot for groups of the viewpoints in priority setting generated in SPSS

Table 3. Cronbach's α for Prioritization Scale

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.884	.884	12

Table 4. SPSS output for PCA extraction of components of ICPS viewpoints in priority setting

Total Variance Explained				Rotation Sums of Squared Loadings ^a
Component	Total	% of Variance	Cumulative %	
1	7.275	25.981	25.981	4.915
2	5.032	17.971	43.953	4.356
3	3.539	12.641	56.594	3.631
4	2.746	9.806	66.400	3.809
5	2.616	9.343	75.742	3.630
6	2.098	7.494	83.236	3.404
7	2.025	7.234	90.470	2.755
8	1.177	4.202	94.672	4.443
9	.704	2.514	97.186	
10	.531	1.898	99.084	
11	.256	.916	100.000	
12	1.523E-15	5.439E-15	100.000	
13	8.177E-16	2.920E-15	100.000	
14	6.704E-16	2.394E-15	100.000	
15	5.508E-16	1.967E-15	100.000	
16	3.735E-16	1.334E-15	100.000	
17	3.005E-16	1.073E-15	100.000	
18	2.428E-16	8.673E-16	100.000	
19	1.444E-16	5.159E-16	100.000	
20	1.235E-16	4.410E-16	100.000	
21	3.702E-18	1.322E-17	100.000	
22	-1.037E-16	-3.703E-16	100.000	
23	-2.170E-16	-7.750E-16	100.000	
24	-2.578E-16	-9.208E-16	100.000	
25	-3.631E-16	-1.297E-15	100.000	
26	-4.778E-16	-1.706E-15	100.000	
27	-6.069E-16	-2.167E-15	100.000	
28	-8.064E-16	-2.880E-15	100.000	

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Prior to interpretation, the distribution of viewpoints was compared to that of the interdisciplinary groups and setting type:

Table 5. SPSS output for viewpoint groups in ICPS priority setting

	Structure Matrix							
	Component							
	1	2	3	4	5	6	7	8
Record 1					-0.322		-0.863	
Record 11	0.312				0.941			
Record 14		-0.764	0.309		0.345		0.376	
Record 17			-0.341		0.838	0.303		
Record 18		0.31		0.363	0.683	0.312	-0.383	-0.414
Record 19	0.817				0.343	0.314		-0.64
Record 20		0.553			0.575			-0.595
Record 21	0.329							-0.367
Record 22	0.875							-0.318
Record 23	0.426		-0.867					
Record 24	-0.586		0.475	0.458	-0.319	-0.36		0.399
Record 25						0.846		
Record 26		0.806						
Record 27		0.875						
Record 28			0.917				0.304	
Record 29						0.87		
Record 32	0.48	-0.424			0.475	0.441		-0.483
Record 33		-0.47	-0.741					
Record 34	0.529			0.512				-0.632
Record 35		0.508	0.303	-0.55	0.305	-0.308	0.309	0.513
Record 36			-0.386	0.92				
Record 37				0.82				-0.405
Record 38	-0.968							
Record 39		0.405		-0.823		-0.345		0.302
Record 40	0.304	-0.67	-0.335	0.532		0.472		-0.404
Record 41	0.848		-0.466			0.401		
Record 43		0.332				0.59	0.304	-0.659
Record 44							0.923	

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

The viewpoints were subjected to further analysis of concordances and discordances within eight groups identified in QFA.

QFA8 Intragroup Concordances and Discordances

The concordances within QFA1 viewpoint group were evident in assigning medium level priority in improving ICPS to PCM, lower level priority to BTD; the discordance within the group was about whether critical communication and feedback (CCF) or reflexivity and adaptability (RA) are of primary importance. This group of opinions was named "Critic" due to existing strong positive and moderate negative correlations with P-set.

The group consisted of ORRN/OR Surgical technology and PACU RNs.

The concordances within QFA2 viewpoint group were evident in assigning higher level priority in improving ICPS to CCF, SE, and TTC. Mid-level priority was assigned to SCDPC, PCM; lower level priority to BTD. The discordance within the group was about the importance reflexivity and adaptability in improving ICPS. This group of opinions was named "Technocratic". Surgeons and PTs were included in this group. The concordances within QFA3 viewpoint group were evident in assigning midlevel priority in improving ICPS to RA, TTC, and common sense of purpose. The discordances within the group were evident in seeing CCF, SE, PCM, fairness of distribution of responsibilities and rewards, and adaptability as primary important in improving ICPS.

This group of opinions was named "Polarized-reflexive, visionary". Surgeons and ORRN/OR Surgical technology were included in this group. The concordances within QFA3 viewpoint group were evident in assigning higher priority to the shared sense of purpose, midlevel priority to SCDPC and BTD. The discordances within the group were evident in seeing CCF and SSA as primary important in improving ICPS. This group of opinions was named "Collegial". CRNAs, OR Nursing Administration, and PTs were included in this group. The concordances within QFA5 viewpoint group were evident in assigning high level of priority to CCF. Mid-range levels of priorities were assigned to shared sense of purpose and TTC and relatively low levels to SE and BTD. The major discordance within the group was evident in seeing fairness of distribution of responsibilities and rewards as primary important in improving ICPS. This group of opinions was named "Communicator".

Table 6. The distribution of Viewpoint Groups (color-coded) was not associated with Discipline or Setting

Discipline	Record	Setting
Surgeon	Record 43	Academic MC
Surgeon	Record 44	Academic MC
CRNA	Record 32	Academic MC
CRNA	Record 37	Academic MC
Medical Student	Record 33	Academic MC
Medical Student	Record 38	Academic MC
Medical Student	Record 39	Academic MC
Medical Student	Record 40	Academic MC
Medical Student	Record 41	Academic MC
OR Nursing Administration	Record 11	"Other"
OR Nursing Administration	Record 14	"Other"
OR Nursing Administration	Record 17	Non-Academic MC
ORRN/OR Surgical technology	Record 21	Surgical Center
ORRN/OR Surgical technology	Record 22	Surgical Center
ORRN/OR Surgical technology	Record 23	Surgical Center
ORRN/OR Surgical technology	Record 24	Academic MC
ORRN/OR Surgical technology	Record 25	Academic MC
ORRN/OR Surgical technology	Record 27	Non-Academic MC
PACU RN	Record 26	"Other"
PACU RN	Record 34	Academic MC
PACU RN	Record 35	Academic MC
PACU RN	Record 36	Academic MC
PT	Record 18	Academic MC
PT	Record 28	Academic MC
PT	Record 29	Academic MC
PT	Record 1	Academic MC
OT	Record 19	Academic MC
OT	Record 20	Academic MC

Table 7. QFA1 Viewpoint Group priorities and correlates

QFA Viewpoint Group	Correlation	CCF	SE	SSA	RA	SCDPC	TTC	PCM	Adaptability	BTD	Fairness	Trust	Purpose	
QFA 1	0.817	3		1	11		5	4					6	
QFA 1	0.875	1						3		4			5	
QFA 1	-0.586	12	7	3	1		5		8	2	11	4	1	9
QFA 1	-0.368	11	2	5	6	4	8			7	9	3	1	1
QFA 1	0.848	2	6	8	9	12	1	5		1	3	11		4

Table 8. QFA2 Viewpoint Group priorities and correlates

Component	Correlation	CCF	SE	SSA	RA	SCDPC	TTC	PCM	Adaptability	BTD	Fairness	Trust	Purpose	
QFA 2	0.553	2	1	9	8			7		11			6	1
QFA 2	-0.764				1	4	3	2						
QFA 2	0.806	1	1	6	12	5	1	9		4	7	8	3	2
QFA 2	0.875	1								4	5		2	3
QFA 2	-0.670	2	3	4	5	7	1	6		1	8	9	11	12

Table 9. QFA3 Viewpoint Group priorities and correlates

Component	Correlation	CCF	SE	SSA	RA	SCDPC	TTC	PCM	Adaptability	BTD	Fairness	Trust	Purpose	
QFA 3	-0.867	1	5	6	9		4	12		12	2	1	3	7
QFA 3	0.317						3	1		2				
QFA 3	-0.741	9	1	3	5	6	2	1		4	11	8		7

Table 10. QFA4 Viewpoint Group priorities and correlates

Component	Correlation	CCF	SE	SSA	RA	SCDPC	TTC	PCM	Adaptability	BTD	Fairness	Trust	Purpose	
QFA 4	-0.55	1	1	12	5	4	9	8		3	6	7	1	2
QFA 4	0.92	4	3	5	2									
QFA 4	0.82	3	5	1	7			4		2				
QFA 4	-0.823	12	8	1	11	6	8	5		7	4	3	1	2

Table 11. QFA5 Viewpoint Group priorities and correlates

Component	Correlation	CCF	SE	SSA	RA	SCDPC	TTC	PCM	Adaptability	BTD	Fairness	Trust	Purpose
QFA 5	0.941	1	9		2	3	7	4		11	1	5	6
QFA 5	0.838	1	8		6	5	4	12	1	9	11	2	3
QFA 5	0.683	2	9		1	11							7
QFA 5	0.475	2				4	3	5					

Table 12. QFA6 Viewpoint Group priorities and correlates

Component	Correlation	CCF	SE	SSA	RA	SCDPC	TTC	PCM	Adaptability	BTD	Fairness	Trust	Purpose
QFA 6	0.846	1	2	8	9	1	3	11	4	12	6	5	7
QFA 6	0.87	3	1			9	3	5	4				
QFA 6	0.59	1	1	1	2	2	1	1	1	2	2	1	1

Table 13. QFA7 Viewpoint Group priorities and correlates

Component	Correlation	CCF	SE	SSA	RA	SCDPC	TTC	PCM	Adaptability	BTD	Fairness	Trust	Purpose
QFA 7	-0.863	2		6			7		8	4	3		
QFA 7	0.923		1	1	3	2	1	1	1	3		2	3

Table 14. QFA8 Viewpoint Group priorities and correlates

Component	Correlation	CCF	SE	SSA	RA	SCDPC	TTC	PCM	Adaptability	BTD	Fairness	Trust	Purpose
QFA 8	-0.987	1		2			5	3					4
QFA 8	-0.632	4	9	3	2		6	1		7	12	9	8

Table 15. QFA8 Viewpoint Group Classification

QFA Viewpoint Class	Viewpoint Class Name	Disciplines Represented
QFA 1	Critic	ORRNs/OR Surgical technology PACU RNs
QFA 2	Technocratic	Surgeons PTs
QFA 3	Polarized-reflexive, visionary	Surgeons ORRNs/OR Surgical technology
QFA 4	Collegial	CRNAs OR Nursing Administration PTs
QFA 5	Communicator	CRNAs PACU RNs Medical Students
QFA 6	Focused on Critical Tasks	ORRNs/OR Surgical technology PT Medical Students
QFA 7	Power-Observant (conscious of power dynamics)	OR Nursing Administration ORRNs/OR Surgical technology PACU RNs OTs Medical Students
QFA 8	Task-Oriented	Medical Students ORRNs/OR Surgical technology Ots

There were no significant differences in prioritizations by setting:

Table 15. Kruskal-Wallis testing significant differences in prioritizations by setting

Test Statistics ^{a,b}												
	CCF	SE	SSA	Reflexivity	SCDMC	TTC	PCM	BTD 2B	Adaptability	CRR	Trust	Purpose
Chi-Square	9.909	10.853	7.673	5.139	7.090	6.859	5.987	7.813	9.291	4.503	6.119	4.837
df	6	6	6	6	6	6	6	6	6	6	6	6
Asymp. Sig.	.129	.093	.263	.526	.313	.334	.425	.252	.158	.609	.410	.565

a. Kruskal Wallis Test
b. Grouping Variable: Setting

SPSS output for Kruskal-Wallis testing significant differences in prioritizations among the groups by setting

This group included CRNAs, PACU RNs, and Medical Students. The concordances within QFA6 viewpoint group were evident in assigning high levels of priorities to SE, CCF, and TTC, and mid-level priority to adaptability. The discordances were evident in seeing the same value of SSA, RA, SCDPC, PCM, BT, shares sense of trust and purpose in improving ICPS. This group of opinions could be named "Critical process-focused". ORRN/OR Surgical technology, PTs, and Medical Students were included in this group. The concordances within QFA7 viewpoint group were evident in assigning midlevel priority in improving ICPS to BT. The discordance within the group were evident in seeing the same importance in SSA, TTC, and adaptability in improving ICPS. This group of opinions could be named "Power-Observant" (conscious of power dynamics). OR Nursing Administration, ORRN/OR Surgical technology, PACU RNs, OTs, and Medical Students were included in this group. The concordances within QFA 8 viewpoint group were evident in assigning high levels of priority to PCM and SSA, mid-range priorities to TTC. Mild discordance within the group were evident in seeing the same level of importance in CCF and shared sense of purpose. This group of opinions could be named "Task-oriented" (supportive of coordinated process). Medical Students, ORRN/OR Surgical technology, and OTs were included in this group. To summarized, eight viewpoint classes identified in MQM-FA were named: Critic, Technocratic, Polarized-reflexive-visionary, Collegial, Communicator, Focused on Critical Process, Power-Observant (conscious of power dynamics), and Task-Oriented.

Remarkably, there were three fill-in blank entries related to priority setting exercise stating: "All #1", "All", "All points of perioperative setting" consistent with several additional entries of #1 for all or many items in prioritization scale constituting a total of seven responses that could be tagged as the Absolutist Viewpoint Opinions (N=7). The items had to be excluded from the statistical analysis due to lack of variance. However, this absolutist viewpoint was significant in the study sample ($7/42 * 100\% = 16.67\%$). This finding is transferrable to the study population.

DISCUSSION

Prioritization Scale was designed for the assessment of differences in viewpoints; it was useful in identification and description of nine priority-setting viewpoint groups among the survey participants. The utility of the Modified Q-methodologic FA (mQFA) technique in classification of participant opinions was supported by the results of this study. Reliable parameters of priority setting were obtained utilizing Q-sample Prioritization Matrix in REDCap, supporting the feasibility of this approach and scale in the analysis of viewpoints in SCDM and in evaluations of ICPS processes. Modified Q-methodologic analytic techniques were useful in delineation of specific viewpoint groups and in detailing the sources of potential contentions. Cumulative 94.672 % of variance was explained with eight viewpoint groups with eigenvalues greater than 1.0 and factor loadings greater than 0.30 in the Q-FA model. Eight viewpoint groups included: Technocratic, Polarized-reflexive-visionary, Collegial, Communicator, Focused on Critical Process, Power-Observant (conscious of power dynamics), and Task-Oriented. The ninth viewpoint group included Absolutist viewpoints (16.67% of P-set). Association of the viewpoint groups with the disciplinary subgroups was assessed to test theoretical

assumptions drawn from literature review about the importance of certain ICPS antecedents and was not supported by the results of this study. Lack of association between the viewpoints and disciplines or settings in this sample is supporting the conclusion that the influences of the organization (setting) or professional affiliation (discipline) were not significant predictors in ICPS priority setting. Therefore, the prioritization differences within IDT could have been influenced by individual (knowledge, skills, and attitudes) and interpersonal interactive factors subject to further research. Acceptable but small P-set size in this study is impacting the generalizability of results. Larger P-set could offset the results and conclusions. Survey response bias risk must be assumed as in average survey environment. Participant familiarity with the process and skill with prioritization could have influenced the results. Prioritization scale Q-sample included 12 items for prioritization; reducing the number of items in future applications should decrease possible response bias due to respondent fatigue. The variance and participant subjective biases were the focus of this study and, therefore, their influence on the results and conclusions is appreciated. We are not aware of any published research using the same subject (IC antecedents, particularly SCDPC), population (IDT), setting (PS), and methodology (on-line survey with Q-methodology) to compare our results with. The methodology and instrument utilized in this study could be useful in IDT conflict management, ICPS and technical process development, and in collaborative decision-making and problem-solving.

Conclusion

In this study, we were able to identify the primary factors, important in improving ICPS and the viewpoint groups and patterns using modified Q-methodologic approach. Utility of Q-sample Prioritization Scale built in Modified Q-methodologic analytic approach was feasible in delineation of specific IDT viewpoint groups of PS and in detailing the sources of potential contentions. We found that, although there were discernable differences in prioritizations among the participants, professional discipline or setting were not significant predictors of such differences. Larger sample size could offset these conclusions. In patient-safety driven and resource-constrained innovative PS environment, it is essential to find appropriate approach to the improvement of IDT interpersonal interactions and to support of ICPS. These efforts are needed for enhanced problem-solving synergy and congruence in decision-making and decision support to capacitate IDT adaptability in conflicting situations.

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