Factor Analysis of Interteam Collaboration Process for Family Planning Program (Longitudinal Prospective Time Series Design)

Anif Prasetyorini1,2*, Thinni Nurul Rochmah3,4*, Fendy Suhariadi5,6, Achmad Djunawan1, Serlly Drastyana1

1 Doctoral Program, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia; 2 Hospital Administration, College of Health Sciences, Soetomo Hospital Foundation, Surabaya, Indonesia; 3 Department of Health Administration and Policy, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia; 4 The Airlangga Centre for Health Policy Research Group, Surabaya, Indonesia; 5 Doctoral in Human Resources Development, Postgraduate School, Universitas Airlangga, Surabaya, Indonesia; 6 Department of Psychology, Faculty of Psychology, Universitas Airlangga, Surabaya, Indonesia

Abstract

BACKGROUND: The success of Family Planning (FP) program is strongly determined by a collaboration process of two organizations responsible in managing the program. There has not any collaboration concept discussing the program within team level but belonging to different organizations.

AIM: The objective of the study was to conduct factor analysis of interteam collaboration process in cross-organization for FP.

METHODS: This study was an observational study with a longitudinal prospective time series design involving 30 teams. One team consist of 1 coordinator midwife in charge of the FP program at the Community Health Center, 3 member midwives, 1 coordinator, and members from the FP service team (field extension unit). This study distributed questionnaires to 30 teams which were taken by simple random sampling to provide agreed answers. This measurement was carried out 3 times, namely, in November, December 2021 and January 2022. Data were analyzed using factor analysis through SPSS Program.

RESULTS: Factor analysis in interteam collaboration resulted in KMO value and Bartlett’s test >0.5 with 0.000 significance and MSA value in Anti Image Metrics >0.5. The result of variable extraction process and factor rotation, with Eigen value was 1.661. The cumulative total variety value was 83.057%. Shared value (shared structural dimensions and shared team autonomy) and mutual benefit indicators could explain interteam collaboration variables.

CONCLUSION: This study demonstrated that interteam collaboration process was an three factor, effort for shared value of structural dimensions, and shared value of team autonomy process by considering mutual benefit of interteam belonging to different organizations.

Introduction

The success of Family Planning (FP) program becomes intersectoral responsibility. In Indonesia, FP Program activities involve two institutions, namely, National Population and FP Board (BKKBN) and Ministry of Health. National Population and FP Board is responsible for demand creation of FP services while Ministry of Health is responsible for its supply. Technically, in district level, FP program is held by FP Program Team comprising Public Health Center staff (FP Program Coordinator of Public Health Center and Village’s Midwife) and Extension Worker of FP Program of district (comprising Extension Worker Coordinator of FP Program and Extension Worker of FP program).

FP participant coverage indicator is one of output indicators which directly describe FP Program performance. Recent data of Lamongan Regency were included in the bottom ten regencies having active FP participant coverage (70.93%), below the average percentage of participant coverage of East Java Province (75.56%) (Dinas Kesehatan Provinsi Jawa Timur, 2020) [1].

So far, several studies have described the success of FP Program only seen from the public’s point of view [2], [3], [4], [5], [6], [7], [8] and the roles of healthcare staff, especially in terms of supply/contraceptive tool supply. Those studies included contraceptive guideline [9], contraceptive financing policies [10], contraceptive usage failure policies [11], education and training for healthcare staff in administering contraceptive services [12], and monitoring and evaluation of FP program for healthcare staff [13]. Unfortunately, there has not yet any study discussing intersectoral collaboration. A good and continuous coordination between National Population and FP Board (BKKBN) and Ministry of Health in
national, provincial, and local regency/city levels in managing FP services become an essential topic to discuss [14].

FP program implementation in the field has many obstacles, although each organization’s role has been clearly distinguished. Emerging collaboration between Public Health Center team and Extension Worker of FP Program team has often been disrupted by various problems such as differences in policy, culture, and leadership in implementing FP Program. Egosectoral mindset has remain affected the stakeholders’ perception resulting in each responsible institution becomes fragmented by its respective work programs in each agency.

According to the literature review, collaboration levels comprise of 3 categories, including individual, team, and organization. Individual-level collaboration incorporates horizontal and vertical interpersonal collaboration [15]. Team-level collaboration within an organization includes inter-work unit collaboration [10]; interagency collaboration [11]; intra-organizational collaboration [10], [12]; and inter-departmental collaboration [13], [14]. Organization-level collaboration involves interorganizational collaboration [15],[16],[17],[18]; cross-sector collaboration [19]; multi-organizational partnerships [20]; multi-actor collaboration [21]; interagency collaboration [22], [23]; and intersectoral collaboration [24].

The most studied collaboration process includes interprofessional, interdepartmental/inter-work unit/interagency/interorganizational collaboration within the level of one organization or cross-sector/interorganizational/multi-organizational/multi-actor/interagency/intersectoral collaboration. However, there has been no literature discussing collaboration between teams belonging to different organizations which is called interteam collaboration in Non-Profit Programs to improve the team’s performance. The aforementioned collaboration in this study developed interorganizational theory by Thomson and Perry (2006) and Thomson et al. (2007).

Objective

The objective of the study was to conduct factor analysis of interteam collaboration process in cross organization for FP program.

Methods

This research was an observational study with a longitudinal prospective time series design. The population in this study was the entire FP program team in Lamongan Regency employing 33 teams from two organizations that are responsible to implement the FP program in Lamongan regency: The Community Health Centre, and Population Control and FP Service. The unit of analysis was the FP program team in Lamongan Regency. There were 30 teams. One group consist of 1 coordinator midwife in charge of the FP program at the Community Health Center and 3 member midwives, 1 coordinator and members from the FP service team (field extension unit). The researcher chose these respondents because we only needed 2 coordinators and implementers in each work area as representatives by taking into account the time of the study.

The criteria for the FP program team were not from an area having a lockdown status, the Public Health Center and the FP extension worker team members were willing to be respondents, the team members could be either civil servants or honorary employees, the team members had worked at least 3 years doing the same job, and the coordinator midwife and the FP extension workers had served in the past 1 year (calculated at the time of data collection).

The sampling technique employed in this study was a simple random sampling. The number of samples after being calculated was 30 teams. Interteam collaboration was measured three times within a period of 3 months, namely, November, December 2021, and January 2022. Measurement of interteam collaboration was conducted through questionnaires.

Shared responsibility was measured based on interteam responsibility, while the shared cultural characteristics were measured utilizing an instrument developed by Abu Bakar and Connaughton (2019) adjusted to team’s concept. Shared leadership measurement in this study applied a standard instrument, namely, Shared Professional Leadership Inventory for Teams. The measurement of shared decision making (SDM) in this study developed a standard instrument of The SDM-Q-9 [25]. The measurement of shared strategic coordination and communication mechanism used criteria by Vailitis. Shared resources were measured using 3M and 1T concepts. Shared risk was measured based on three items, namely risk reduction, risk mitigation and risk coping [26]. Mutual goal was measured based concept by Gulzar & Henry (2005). Mutual understanding was measured according to Kahn’s concept (1996). Meanwhile, mutual trust was measured based on Mulroy’s concept (1997).

The coordinator midwife, three member midwives/village midwives of FP program, one extension worker coordinator, and three extension worker members of FP program filled the questionnaire out. The answers were the result of the concentration of both parties. The measurement of interteam collaboration results was classified into four categories, namely, very poor (if the score was 54–94), not good (if the score was 95–135), good enough (if the score was 136–176), and good (if the score was 177–216). Factor
analysis from SPSS program had been applied for data analysis to show factor of interteam collaboration from two organizations.

**Ethical approval**

This study was approved by the Decree of Faculty of Public Health Universitas Airlangga Number 39/EA/KEPK/2021.

### Results

The research resulted that from 30 samples, 23.33% FP Program Coordinator Midwives did not position in the Primary Public Health Center. About 26.67% of FP Program Coordinator Midwives multitasked by doing other tasks and functions in the Public Health Centers. So did the Extension Workers of FP Program (PLKB), as 64% of the Extension Workers of FP Program multitasked by becoming Extension Workers Coordinator of FP Program of their respective districts. In addition to multitasking, the high number of reproductive-aged couples did not correspond to the existing number of the Extension Workers of FP Program.

Interteam collaboration is an interaction process between two teams belonging to two different organizations having different responsibilities but sharing the same goals, measured by two indicators, namely, shared value and mutual benefit. Interteam collaboration was measured 3 times during a period of 3 months, namely, November, December 2021, and January 2022. Identification results of interteam collaboration of interteam FP Program are viewed in Table 1.

**Table 1: Identification results of interteam collaboration of Interteam FP program for 3 months**

<table>
<thead>
<tr>
<th>Interteam collaboration indicator</th>
<th>Mean</th>
<th>Sig. (Levene’s test)</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Value</td>
<td>124.53</td>
<td>125.30</td>
<td>125.87</td>
</tr>
<tr>
<td>Mutual Benefit</td>
<td>27.73</td>
<td>27.83</td>
<td>27.97</td>
</tr>
<tr>
<td>Total</td>
<td>152.26</td>
<td>153.13</td>
<td>153.84</td>
</tr>
<tr>
<td>Category</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Based on the table, interteam collaboration within a period of 3 consecutive months belonged to medium category. The mean of each time period had an increase despite being insignificant. Shared value indicator category of the three periods belonged to medium category (score 115–160), while mutual benefit indicator of all measurement results belonged to high category (score 26–32). The indicator requiring the most attention was shared value. Based on Levene’s test, the result showed that the three data had homogenous variety (sig. = 0.821).

Shared value is an effort to share in several things considered to be important in collaborating interteam belonging to different organizations with sub variables of shared responsibility, shared organizational culture, shared leadership, SDM, shared strategic coordination, and communication mechanism, shared resources, and shared risk. Identification results of shared value of FP Program for 3 months are viewed in Table 2.

**Table 2: Identification results of shared value of FP Program for 3 Months**

<table>
<thead>
<tr>
<th>SharedValue Indicator</th>
<th>Mean</th>
<th>Sig. (Levene’s test)</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared responsibility</td>
<td>15.37</td>
<td>15.40</td>
<td>15.37</td>
</tr>
<tr>
<td>Shared organizational</td>
<td>11.97</td>
<td>11.97</td>
<td>11.97</td>
</tr>
<tr>
<td>Shared leadership</td>
<td>51.01</td>
<td>51.32</td>
<td>51.43</td>
</tr>
<tr>
<td>Shared decision making</td>
<td>12.27</td>
<td>12.33</td>
<td>12.37</td>
</tr>
<tr>
<td>Shared strategic</td>
<td>14.90</td>
<td>15.07</td>
<td>15.13</td>
</tr>
<tr>
<td>coordination and communication mechanism</td>
<td>16.10</td>
<td>16.13</td>
<td>16.15</td>
</tr>
</tbody>
</table>

Table 2 demonstrated that shared value within three periods of measurement belonged to medium category. The mean of shared value had an insignificant increase. There were indicators not experiencing any increase or decrease which were shared organizational culture and shared resources. Indicator having the lowest mean was shared strategic coordination and communication mechanism resources. This is because the indicator’s mean was too far from the maximum score. Based on Levene’s test, the result showed that the three data of measurement results were homogenous (sig. = 0.853).

The second indicator of FP program interteam collaboration was mutual benefit. Mutual benefit is the similarity presence on several things between collaborating parties based on mutual goal, mutual understanding, and mutual trust. Identification results of FP Program mutual benefit are viewed in Table 3.

**Table 3: Identification results of FP program mutual benefit for 3 months**

<table>
<thead>
<tr>
<th>Mutual Benefit Indicator</th>
<th>Mean</th>
<th>Sig. (Levene’s test)</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutual Goal</td>
<td>7.30</td>
<td>7.30</td>
<td>7.30</td>
</tr>
<tr>
<td>Mutual Understanding</td>
<td>10.50</td>
<td>10.53</td>
<td>10.63</td>
</tr>
<tr>
<td>Mutual Trust</td>
<td>9.53</td>
<td>10.00</td>
<td>10.03</td>
</tr>
<tr>
<td>Total</td>
<td>27.73</td>
<td>27.83</td>
<td>27.97</td>
</tr>
<tr>
<td>Category</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

Table 3 showed that mutual benefit within three periods of measurement belonged to high category. The mean of mutual benefit had an increase despite being insignificant. The indicator having the lowest mean was mutual trust. This is because the mean of the indicator was too far from the maximum value. Based on Levene’s test, the result showed that the three data variants of measurement results were homogenous (sig. = 0.939).

According to the homogeneity test above, the data of $t_j$ were used for the next analysis. In addition to being homogenous, the result data of $t_j$ measurement
became the last condition of FP Program team in conducting interteam collaboration.

Based on the Table 4, factor analysis in interteam collaboration resulted in KMO value and Bartlett’s test >0.5 with 0.001 significance and MSA value in Anti Image Metrics >0.5. Consequently, the interteam collaboration variable was concluded to be feasible to be proceeded in the next stage of analysis. The result of variable extraction process and factor rotation, with Eigen value was 1.661 (meaning that the hypothesized variables could be grouped as one factor or one new variable). The cumulative total variety value was 83.057%. Shared value and mutual benefit indicators in this study could explain or measure interteam collaboration variable.

Table 5: Indicators of composing factors of shared value based on rotation model factor analysis

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor number</td>
<td>Eigen value</td>
</tr>
<tr>
<td>Shared responsibility</td>
<td>0.967</td>
</tr>
<tr>
<td>Shared organizational culture</td>
<td>0.558</td>
</tr>
<tr>
<td>Shared leadership</td>
<td>0.835</td>
</tr>
<tr>
<td>Shared decision-making</td>
<td>0.673</td>
</tr>
<tr>
<td>Shared strategic coordination and communication mechanism</td>
<td>0.343</td>
</tr>
<tr>
<td>Shared Resources</td>
<td>0.215</td>
</tr>
<tr>
<td>Shared Risk</td>
<td>-0.126</td>
</tr>
<tr>
<td>Correlation value based on component transformation matrix</td>
<td>0.814</td>
</tr>
</tbody>
</table>

Factor analysis in shared value resulted in KMO value and Bartlett’s test >0.5 with 0.001 significance and MSA value in Anti Image Metrics >0.5. Therefore, the shared value variable was concluded to be feasible to be proceeded in the next stage of analysis. The result of variable extraction process and factor rotation, with Eigen value was 2.974 with cumulative total variety value of 42.486%. The second Eigen value was 1.459 with cumulative total variety value of 63.328%.

Based on the Table 5, it could be understood that the indicator correlation value of shared responsibility, shared organizational culture, shared leadership, and SDM in component 1 was more than the indicator correlation value in component 2. Hence, those indicators belonged to factor 1. The indicator correlation value of shared strategic coordination and communication mechanism, shared resources, and shared risk in component 1 was less than the indicator correlation value in component 2. Hence, those indicators belonged to factor 2. Both factors above in this study were able to explain or measure shared value variable.

Correlation value of component transformation matrix in both components was more than 0.5. Thus, both created factors could be deemed feasible to explain all indicators in shared value.

Factor analysis in mutual benefit resulted in KMO value and Bartlett’s test >0.5 with 0.011 significance and MSA value in Anti Image Metrics >0.5. Therefore, the mutual benefit variable was concluded to be feasible to be proceeded in the next stage of analysis. The result of variable extraction process and factor rotation, with Eigen value was 1.734 (meaning that the hypothesized variables could be grouped as one factor or one new variable). The cumulative total variety value was 57.804%. Mutual goal, mutual understanding, and mutual trust indicators in this study could explain or measure mutual benefit variable.

Discussion

This study applied interorganizational collaboration theory by Wood and Gray (1991), Thomson and Perry (2006), and Thomson et al., (2007) to develop interteam collaboration concept. The reason is that the theory accommodates process of input and output as well as feedback presence, and therefore components required to do collaboration are accommodated in the process.

Interorganizational collaboration has five dimensions, namely, Governance, Administration, Organizational autonomy, Mutuality, and Norms. Based on the result of researchers’ literature review and the factor analysis, interteam collaboration concept is a sharing value process by considering mutual benefit between two or more teams belonging to different organizations.

To run governance, administration and organizational autonomy need “shared value” and “mutual benefit” concepts conforming to the definition of the collaboration. Meanwhile, mutuality and norms belong to mutual benefit. Therefore, the researchers concluded that interteam collaboration is not merely related to presence or absence of governance, administration, organizational autonomy, mutuality,
and norms dimensions, but it must have a component of how to do the collaboration well by applying shared value and mutual benefit.

These results are supported by related previous study concerning some indicators, including shared value, and mutual benefit as follows:

**First factor of shared value (shared structural dimensions)**

1. Shared responsibility is role sharing duty in FP services based on FP Service Management Guideline of Ministry of Health of Indonesia 2014.
2. Shared organizational culture is an important factor supporting collaboration directly [27].
3. Shared leadership is one of indicators in collaboration [27] and has direct impact on team performance [28]. Researchers conceptualized collaborative leadership as leadership function distribution among group members [29], [30].
4. SDM is a process founded on mutual respect and partnership principles. Interorganizational collaboration requires several levels of interdependence, shared goals, shared norms, shared risks, SDM, and shared reward (or loss) among participating parties [16].

**Second factor of shared value (shared team autonomy)**

1. Shared strategic coordination and communication mechanism are collective efforts in managing activities, starting from planning to evaluation, and supported by formal communication efforts [27].
2. Collaboration is completely difficult without sufficient fiscal, material resources and space. Concerning obstacles experienced by both sectors in obtaining resources for collaboration, any available resource must be used optimally. Optimal Resource Usage consists of four elements: (a) Financing mechanism; (b) resource investment to start and maintain the collaboration; (c) the geography of partner’s closeness; and (d) time to do the collaboration [27].
3. Interorganizational partnership is principally a risked effort [16]. Collaboration is not merely sharing resources, communication, or leadership, but an indicator to measure how far both involved parties are willing to share risks.

**Mutual benefit factor**

Mutuality dimension of a collaboration process refers to a forging relationship process benefitting organizations involved in the partnership. It works up differences to reach a relationship satisfying each organization’s interests. Mutuality is rooted in interdependence [18]. In accordance with Gulzar and Henry (2005), collaboration is an effort to transact resources in achieving advantageous goals through agreed structures and processes.

Governance is a structural dimension of collaboration that institutionalizes a SDM process about the rules that will govern behavior (shared structural characteristics) and partner relationships and structures to reach agreement on collaborative activities and outcomes through shared power arrangements (shared leadership). Governance includes two things, namely, the negotiation process and commitment. Administration involves getting things done through an effective system that supports clear roles and responsibilities (shared responsibility), clear goals, and effective communication channels [18].

Based on the definition of governance and administration, the variables shared responsibility, shared cultural characteristics, shared leadership, and SDM are more suitable to be part of governance and administration. So the researchers gave the term shared structural dimension.

One of the most important collaboration dilemmas for leaders and managers of non-profit organizations is managing the inherent tension between partner organizations, interests in achieving the organization’s mission individually and maintaining the distinct identities of the collaborating parties and collaboration interests, achieving collaboration goals, and maintaining accountability to collaborative partners and their stakeholders. The organizational autonomy dimension of the collaborative process, thus, refers to the process of managing or reconciling tensions between the organization and the (collective) interests of the collaboration.

This is in line with the results of the factor analysis on the shared value variable, that the shared strategic coordination and communication mechanism, shared resources, and shared risk become one separate component. These three sub-variables are very much needed in managing the tensions and interests of collaboration. So based on the definition of organizational autonomy, the three sub-variables above are more suitable to be part of shared team autonomy.

**Study limitations**

The limitation of this study includes small sample size and no intervention to create collaboration.
Conclusion

This study proved that interteam collaboration consist of three factors that shared structural dimensions and shared team autonomy process by regarding mutual benefit between two or more teams belonging to different organizations. Good shared value indicators include shared responsibility, organizational culture, leadership, decision-making (shared structural dimension), strategic coordination and communication mechanism, shared resources, and shared risk (shared team autonomy). Good mutual benefit indicators between two organizations occur when fulfilling components of mutual goal, understanding, and trust. This research helps provide new indicators of collaboration processes between teams from different organizations. With this new indicator, it can be used as a tool to measure the collaboration process for monitoring and evaluation. For better interteam collaboration in non-profit program.

References


