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Evaluation of military healthcare organizations' structure models in asymmetric warfare

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Abstract

Aims: Organizational structure has key role in the implementation of organizational goals and strategies. The purpose of this study was to provide a military healthcare structure model based on the characteristics of asymmetric in order to achieve a proper organizational structure.

Methods: This mixed method study was conducted in 2009. The qualitative phase was done by in-depth interviews with 18 top managers of the healthcare system who were selected by purposeful sampling. Qualitative data were evaluated by qualitative content analysis. Then, structural models were established by focused group discussion. In the quantitative phase, the opinions of 95 military healthcare senior executives were compared considering flexibility, accuracy, decision-making and compatibility of the structural models with asymmetric war.

Results: Four organizational structure models were extracted. The "Staff-base" model gained the highest score (68.5% and 63.8% respectively) in the field of flexibility and accuracy and the "Command-base" model gained the highest score (76.3%) in the field of decision-making. There was significant relationship among all mentioned fields (p=0.007, 0.003, 0.023). Investigating the overall compatibility with asymmetric war, there was no significant relationship between the four models (p=0.9), but the "Centralized" model gained the maximum score (61.6%).

Conclusion: Although there isn't complete agreement on a specified structure to ensure all needs of asymmetric war conditions, the "command-based" structures seems more appropriate due the high speed of decision-making.

Keywords: Asymmetric War, Structure, Military Healthcare Organization

Introduction

Asymmetric war is used to describe a kind of war in which the conflicting parties are not on the same level of military technology and capabilities. Hence, the methods that used at this war are different [1, 2]. The US institution of strategic studies has provided a thorough definition of asymmetric warfare; "lack of symmetric or asymmetric means initiating, organization and thinking different from those of the enemies, in a way to maximize their excellence and capabilities and take advantage of the enemies' weaknesses and therefore obtain more freedom of action and eventually achieve initiative" [3, 4]. After the cold war in the 1990s, this kind of war, also known as the fourth generation of warfare, is based on principles such as decentralization, initiative-taking and asymmetry, which are executable in a vast and expansive area or in a spot, by governmental and non-governmental organizations and small military groups. Another feature of future warfare is different organization [5, 6]. First and second war among the US and Iraq, Afghanistan, and Lebanon's 33 day battle are examples of this new approach [7].

After planning, organizing as the main second function of management is a process which on its bases the organization's activities are divided, grouped and coordinated formally and as a result of this, organizational structure is formed as one of the main elements of the organization [8, 9]. Also, it is known as a means for providing a view of communicative system and decision-making centers in the organization [8, 10, 11, 12]. In asymmetric warfare, due to environmental complexities, the appropriate organizing of military organizations is considered as important equipment for implementing strategy and achieving their goals and the use of the new methods of war has caused changes and development in overall structures of future warfare [13, 14]. Conditions and the variables of asymmetric warfare are different from previous war and demand their appropriate organizing [15, 6].

Thus, with respect to the experiences of asymmetric warfare in recent decade and its differences from

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previous wars, the structure of Iran's military organization, including military health care, should be designed, considering particular features of asymmetric warfare variables. Military health care organizations, as parts of warfare organizations which have the responsibility of warfare support or supporting warfare services during war, are like other parts subordinate to and under the influence of above conditions. In addition, the speed of reaction and response to the ambush is so vital [16].

World different armies have designed various structures to organize their health care system and revised in particular time periods. From 1948 to 2000, several researches and studies have been done so as to re-organizing military health care system in the US army in which the main aim has been to focus constantly on obtaining defense preparation and the way of their implementation. The specialist team of RAND's research center related to the US Defense Ministry in 2002 has proposed replaced organizational structures for military health care system. In Susan *Hoosk & Gary Sichin*'s study, it has been offered re-organizing of the US medical structure within the framework of four structural models [17]. In England's army, *Smith* et al. proposed, by studying the experiences of First World war and other wars in 1949, that medical service unit in maritime, land and air forces are formed separately so as to provide services in future wars, since each force has its own problems and issues [18]. In Turkey, medical-health commandership is under the supervision of the general headquarter of armed forces and hospitals are related to this commandership. Germany's army has five forces and medical caring section is one of them. Health and medical commandership acts independently from forces and all staff in medical caring section who work in three-kind forces of maritime, land and air are under the supervision of this joint commandership. France's army has military health caring section in centrality and all units are its subordinates and military hospital is under its subordination. France's three-kind army forces have no health caring section and only have the position of advisory of health caring section in the area of forces commandership [19]. *Mohebbifar* et al. designed the pattern of disaster management structure for Iran as an engineering model. Their study was comparative in nature and the method employed was based on survey. Research on scientific resources and related information databases, designing preliminary pattern and the use of Delphi technique by 30 experts and the specialists all were formed into a questionnaire and eventually the final pattern was proposed the structure for disaster management for Iran as an engineered structural model [20].

Considering the mentioned cases and the necessity of armed forces' health care preparation so as to combat against the effects of would-be war, this research was done with the aim of providing a model of the structure of military health care organizations based on the features of asymmetric warfare so as to achieve appropriate organizational structure.

Methods

This mix method study was done in 2009. The experiences derived from the use of mix methods show that the use of this method will pave the way for better understanding of social phenomena, including organizational behavior, and their defining and will establish the required compatibility among research goal, the method of collecting data and their analysis [21]. Mix method has different kinds and in this research, sequential exploratory mix method was used based on the aims of this study which are exploration stemmed from qualitative priority. In this method, first collecting and analyzing qualitative data were done and then on their basis, quantitative data was collected and analyzed. Sampling in this study was done in a mix type approach. In qualitative section, purposeful sampling method (experts and specialists) was used and in quantitative section, probabilistic methods were done [22].

In qualitative section, the sample society included top managers (first-level authorities) of military health care area who consisted of 22 people and were selected and demanded for interviewed using snowball sampling. 18 people participated in face-to-face and separate semi-structured interview concerning the features of health care structure in asymmetric warfare conditions. Viewpoints were introduced and evaluated about the method of management and proposed models for macro-structure in proportionate with asymmetric threats. Data gathered from interview was analyzed, using the method of qualitative content analysis and MAXQDA software. In this method, the data was studied accurately and there was assigned a code for each expressed concept [23]. Data validity was acquired, using external assessment and assessing the participants in which more than 90% of codes were endorsed after assessment. To measure reliability, three interviews were re-encoded by another researcher. Using the software, codes were derived from the interviews context and after being inductively studied, the branches of structural models were extracted. Codes, related to proposed models by

experts and specialists in structure designing, were analyzed and four of organizational structures models were agreed on and provided, using the focus group discussion.

In quantitative section which was done on the society of senior managers of the organization and by purposive and quota (voluntary) sampling, the sampled size was 95 people of senior managers who were distributed in proportion with service location. The criterion for entering the quantitative section of the study was having responsibility at the level of senior management of organization's health care section, and the criterion for leaving the study was the management work experience of less than five years. The number of returned completed questionnaires was 77 (four cases of which was not contributed in the study due to deficiencies in data and lateness in receiving them) and the data belonging to the completed 73 questionnaires was contributed in statistical results. The aim of quantitative section was to compare the ratio of the acquired structural model with the features of asymmetric threats. This was done using the achieved questionnaire with close questions and Likert scale based on the results of quantitative section. The questionnaire's reliability was confirmed by content reliability while asking experts' views (5 people) and the questionnaire's validity was calculated, using Cronbach's Alpha method and confirmed by 0.9% coefficient. The results were analyzed using SPSS 16 software and descriptive-inferential statistical test (Chi-square).

For moral considerations and the request of the intended organization, the (written) obtain of conscious content is available at the beginning of each interview recorded in the context. The organization's name is also confidential and is not mentioned in the article. Conscious content was obtained from participants in both phases of the project.

Results

After accomplishing deep interview revolving based on five scope of higher management of health care section, the health care section at the level of forces, the health care section at the level of geographical regions, the relation between urban and warfare medical caring sections, and eventually the method of managing hospitals, Table 1 was extracted including dimensions of proposed structural models.

After analyzing dimensions of structural models, four proposed structural models were obtained for organizing military health care system whose features are provided in table two (Due to observe confidentiality issues, the origins of structural models are not provided).

Table 1- Comparative comparison of dimensions of proposed structural models derived from the present study

Proposed model	Structural features
The staff-based	Low centralization (decentralization) and low complexity
	Complete separation between the line and the staff and entire centrality of the staff
	The conferment of executive affairs to the line
	Organizing forces of health caring sections
Commandership-based	High centralization and high complexity
	Non-separation between the line and the staff
	The geographical organization of health caring sections
Centralized	High centralization (quite centralized) and medium complexity
	The centralization of executive affairs on commandership
	A structure based on the commandership
Separation (Separating warfare health caring section from non-warfare one	Low concentration (non-concentrated) and low complexity
	Separation between the line and the staff
	Separation between urban and warfare health caring sections
	Organizing health caring sections in forces with a nature only warfare

The age of the respondents was between 29 and 59 years. 82% of them were between 41 and 50 years and the average age was 45.3 years. 14 people (19%) had the managerial experience between 5 to 10 years, 34 people (47%) between 10 to 20 years and 17 people (23%) had more than 20 years of managerial experience. 8 people (11%) did not mention their management experience. 2 people among respondents were holding degrees lower that bachelor, 18 people had bachelor degree, and 16 people had Master degree and the rest 37 people (50%) had PhD. 26% of participants had academic knowledge in the field of health care management and the rest 74% had academic knowledge in the field of one subcategories of the medical sciences. 12% people had work experience between 10 to 20 years and 88% of them had work experience between 20 to 30 years. There was no work experience less than 10 years and more than 30 years in the investigated statistical sample. The average work experience was 25.4 years and the least and the most were 16 and 30 years respectively.

Table 2- Structural features of proposed models by military health care organization

Dimensions→ Model↓	The higher-management of health care section	The management of supportive warfare hospitals	The relation between urban and warfare health caring section	The health care section at forces' level	The health care section in geographical regions
The staff-based	Center in form of the staff	Are managed by the forces	Merging	Subordinate to the center in terms of the staff and under the command of the related force in terms of operation	Under the command of the related force
The commandership-based	The health care centrality in the form of a commandership	By the health caring section of geographical regions	Merging	Doesn't exist	Under the command of the health care section
Centralized	All health care section in the form of a commandership	Centralized by the health care commandership	Merging	Doesn't exist	Doesn't exist
Separated	The health care staff in forces or at the level of commandership	Health care section under the canter of the organization	Separation	Subordinate to the commandership of the related force	Doesn't exist

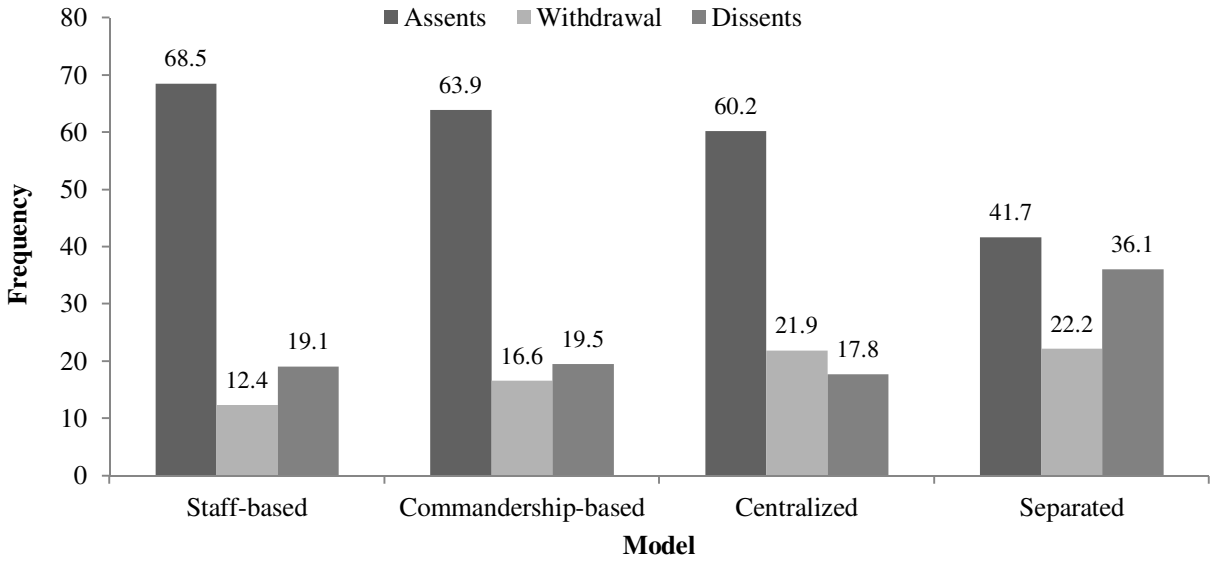

Diagram 1- The frequency distribution of opinions in terms of flexibility in symmetric warfare

Four proposed models in the society of the senior managers of health care the organization were investigated in term of flexibility in asymmetric warfare.

Considering the results, "The staff-based" model with the frequency of 68.5% obtained the highest portion in terms of flexibility and "separation" model with the frequency of 41.7% obtained the least portion in this regard (p=0.023; Diagram 1).

In terms of accuracy when in asymmetric warfare, "The staff-based" model with 63.8% obtained the highest frequency and "separation" model with 45.1% obtained the least frequency (p=0.003; Diagram 2).

In terms of the appropriateness of decision-making speed, "Commandership-based" model obtained the most assents with the frequency of 73.6% and "separation" model obtained the least assents with the frequency of 45.8% from managers' viewpoints (p=0.007; Diagram 3).

In terms of the appropriateness of all the structure with dimensions of asymmetric warfare, "centralized" model obtained the most assents with the frequency of 61.6% and "commandership-based" model obtained the least assents with the frequency 52.8%. But the test's results did not show significant difference among the results of the four models (p=0.09; Diagram 4).

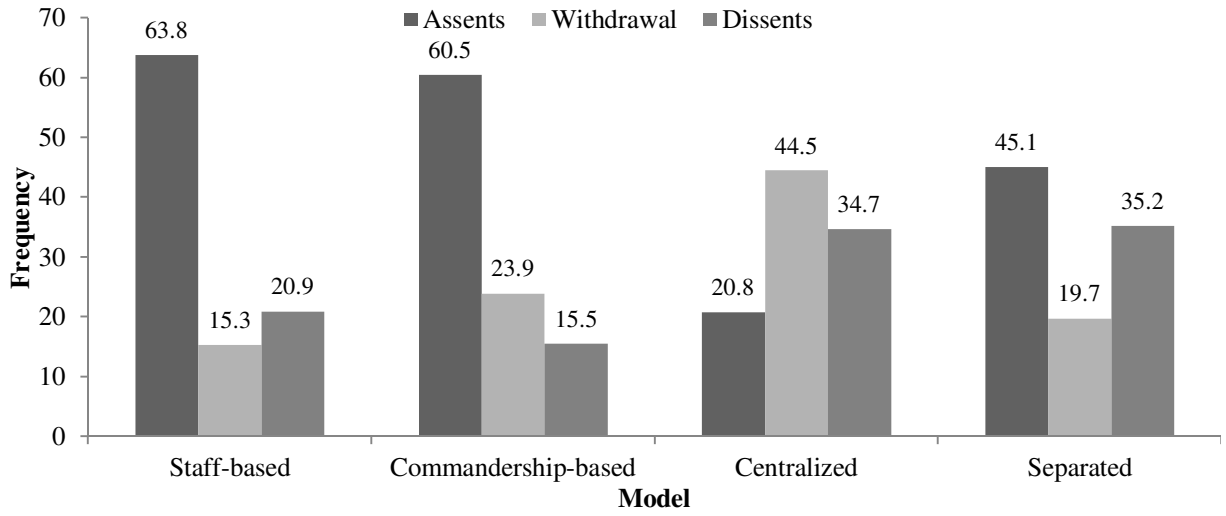

Diagram 2- The frequency distribution of opinions in terms of accuracy in symmetric warfare

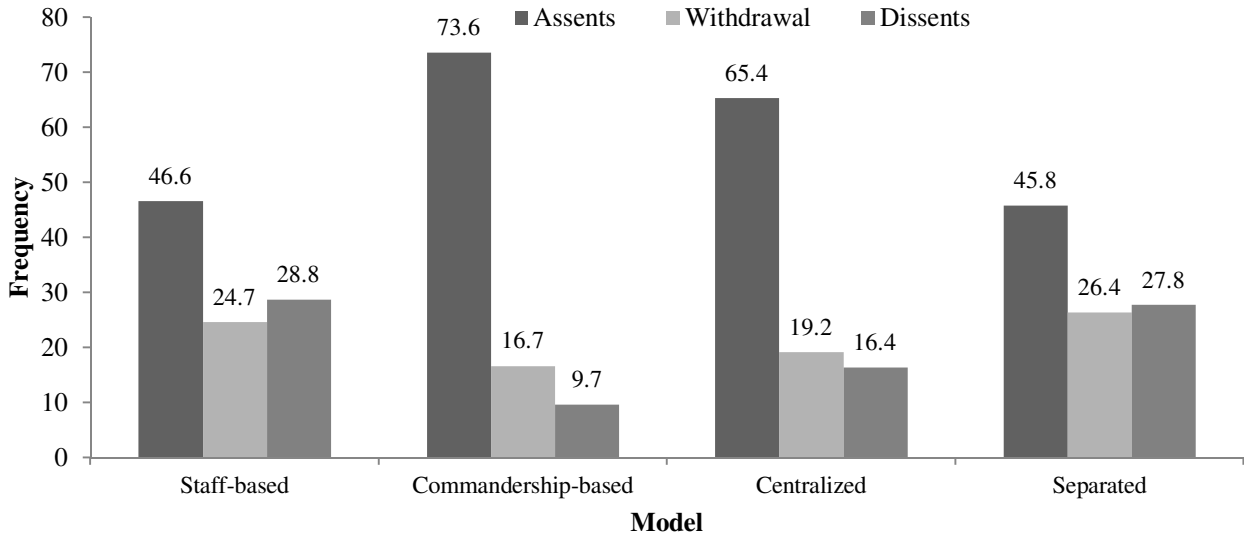

Diagram 3- The frequency distribution of opinions in terms of the appropriateness of decision-making speed in symmetric warfare

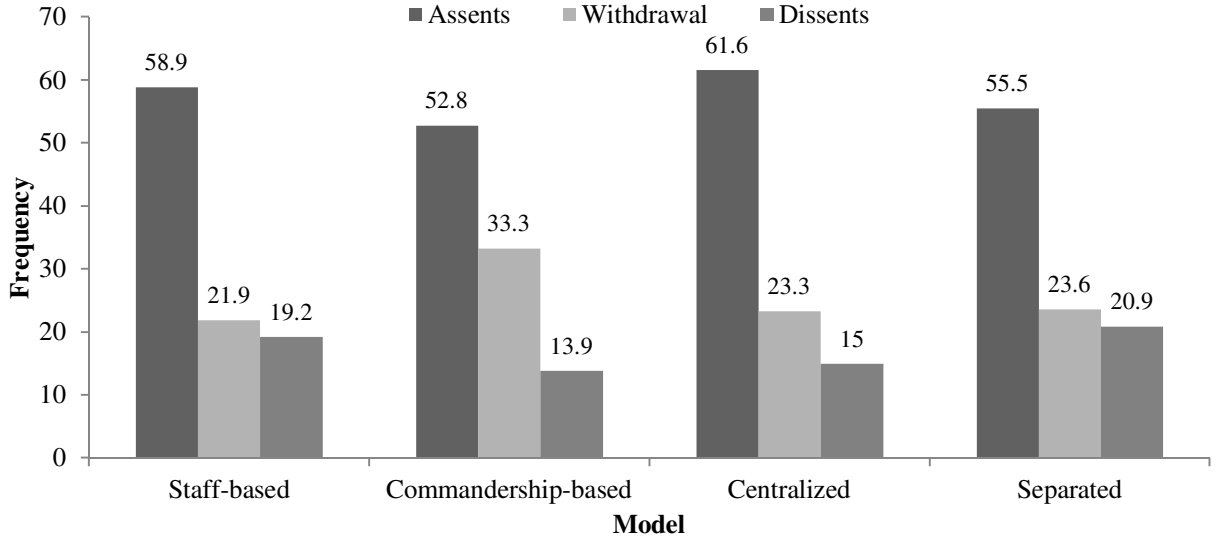

Diagram 4- The frequency distribution of opinions in terms of the overall proportion of the structure with symmetric warfare

Discussion

Although "The staff-based model" of present research did obtain more assents in terms of flexibility in crisis and accuracy, it fell short of expectation in terms of decision-making speed in the orders of the organization; since these two principles are important in asymmetric warfare. "commandership-based" model has received attention because of the appropriateness of decision-making speed of organizational orders but has faced the problem of the inobservance of the principles concerning separation between the line and staff's tasks.

It seems that "centralized" model has succeeded to achieve more assents in terms of overall proportion with asymmetric threats, due to the independence of health caring section in the regions from forces and not being placed under the supervision of their commandership, since this leads to increase in reaction speed and the information transference process as one of important factors in decision-making, which has vital role in asymmetric warfare.

"Separation" model has attracted no attention from respondents and most often received a low score. Interviewees were not often in favor of separating warfare medical caring section from non-warfare medical caring section (urban or general) and were against their separation. Among the reasons for this were the possibility of complete disconnection and the non-use of the non-warfare medical caring section during errands and war. In addition, transmission of the non-warfare health caring section to a section out of military health caring section was among the other anxieties while gathering viewpoints.

In a study done in the US army, RAND's research team proposed four replacing models of organizational structure, in a scheme concerning re-engineering of the structure of the US health caring section [17]. In number one model, it does the scheme for keeping health while preserving the structure of the hierarchy of existing status and revising managerial and supportive methods. This structure is in harmony, to a great extent, with "the staff" model of the present research which includes a non-concentrated and staff-based structure; since in both two models, the main part of warfare health caring section are organized at the level of forces and more centrality is observed in the form of staff. In the number two of the US model, a united commandership is organized under the supervision of a joint commandership of medical caring section, along with health-service management (TRICARE) in three kinds of forces; land, air and maritime. This structure is more similar to the proposed present models of "staff-based and centralized" since all three models follow from a united commandership idea. But "commandership-based" model of the present research supports medical caring section at the level of geographical region instead of forces' health caring section and in "centralized" model, the whole medical caring section benefits from complete concentration. This model shows signs of harmony with the proposed model of "separation" of current research in terms of the separation between urban and warfare medical caring section. In the number three of the US army's model, the management of TRICARE section is under the joint commandership of the organization, in addition to the above three commandership of forces. This structure is more similar to the proposed models of "staff-based and centralized" of current study, as all three models follow a united commandership idea. In the fourth model, two separate sections are formed of which one has the responsibility of commanding preparation sections (warfare medical caring section) and the commandership of medical services belonging to three forces, land, air and maritime, are its subcategories and the other one is TRICARE commandership which directs non-warfare medical services and the health program. This structure is in absolute harmony with the "separation" model of the present study in terms of the complete separation between urban and warfare medical caring sections and both support the idea of the joint commandership of medical caring section with two separate sections of warfare and urban. Smith et al., while studying the experiences of First World War and other wars, have proposed the formation of an independent medical caring section in England' land, air and maritime forces which had not been in existence up to that time and declared problems and special issues of each force as its reasons [18]. In the second phase of this research and in interviewing authorities and experts in health care area, the same feature was endorsed, as it appears that the kind of errand and each force's condition are different from each other and each should have its own particular health caring section.

In Turkey's army, in the subcategory of the armed forces' staff is placed the health care commandership which has three kinds of commanderships under its supervision and these are relatively in harmony with "staff-based and centralized" models of present research [19]. In Turkey's army, research-educational affairs in military medicine faculties and research-houses are all under the supervision of a commandership known as GATA which are the subcategories of three-kind health care

commandership belonging to the staff which is in harmony with the "commandership-based and centralized" models of the current research. Hospitals in Turkey's army are directed under the supervision of a unit known as the armed forces' medical-health service commandership which shows signs of harmony with the "centralized" model of the present research. In Germany's army, health caring sections operate as one of the five-kind forces and under the title of "commandership and staff of health care office" [19]. In general, it is more expansive than all existing structures in world's armies, including Iran and it is similar, to a certain extent, to "staff-based and centralized" models of current research. Germany's health caring section commandership performs the commandership of affairs in different Iran's regions in the form of four regional health care commanderships, each of which has complete hospital, health-emergency units and the corps consisting operational health caring divisions which are relatively in harmony with "staff-based" model of the present research. France's army model, which has army in the centrality of health caring section and has no independent health caring section in forces, is, to a large extent, in harmony with the "centralized" model of the present scheme [19]. The shared feature of both two models is the lack of independent health caring section in forces. In addition, in France's army, hospitals are directed straightly by the centrality of the health caring section which is similar to the provided views in the "centralized" model of this research. This could be ascribed to a concentrated system which is implemented in organizational structure of the health caring section of France's army.

In *Mohebbifar* et al. study entitled "designing the model of disaster management structure for Iran", proposed structure is suggested in the form of a consecutive and centralized structural model which is in harmony with "commandership-based" model of the present study [20]. *Queen H.* et al. proposed four unified technological and educational structural models for medical sciences faculties in Canada and the US of which three models were centralized (in medical faculty, health faculty and in University's centrality) and one model was decentralized in each faculty [24]. 75% of respondents agreed with one kind of centralized models which is in harmony with the respondent's consent of "commandership-based and centralized" models of the current research. In *Barant*'s study, he offered his proposed model in the form of five integrative structural models entitled merging and integration of employment, by merging and centralization of organizational structure of Florida University's health centers while studying the last fifty years of its structure [25]. He has proposed that universities' health centers should endeavor to integrate and merge functions and organization's tasks, in disordered and chaotic conditions of the present environment. His conclusions have similarity with concentrated model in the present scheme.

Lack of access to some information concerning organizational structures due to confidentiality, the lack of possibility of publishing some parts of the results due to confidentiality reasons and severe shortage of published information resources in the realm of organizing concerning military organizations are among the limitations of the current performed research. It is suggested that future researches be done on investigating the weaknesses and strengths of the use of staff-based structures in world's armies, on investigating the weaknesses and strengths of the use of commandership-based structures in world's armies and on designing health and health structure at the level of corps and operational units.

Conclusion

Although, there is no definite structure to provide all dimensions of the agreed war conditions, considering the results and the expressed particular features, it seems that at war conditions, commandership-based structures are more suitable, since the decision-making speed has increased and therefore, there is unanimity of approach. Furthermore, the complete separation between warfare medical caring section and non-warfare one does not meet the required legality in health caring area.

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