Simulation as interference strategy in interprofessional self-confidence in primary health care

Simulação como estratégia de interferência na autoconfiança interprofissional no âmbito da atenção primária

Simulación como estrategia de inteferencia en la autoconfianza interprofesional en el ámbito de la atención primaria

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ABSTRACT
Objective: to verify if the simulation strategy employed for basic life support training and situations of airway obstruction interferes with interprofessional self-confidence in primary health care. **Method:** quasi-experimental study conducted with 68 primary care professionals in the Federal District, Brazil, between June and December 2018. Questionnaire to characterize knowledge and self-confidence were used. A lecture and realistic simulation on cardiopulmonary arrest and airway obstruction were performed as intervention, being statistically significant different results before and after intervention (p<0,05). **Results:** mostly female sample (69.1%), aged between 21 and 70 years. Community health agents predominated (32.4%). Self-confidence improved for the correct management of cardiopulmonary arrest and airway clearance (p <0.001) after intervention. **Conclusion:** Simulation supports experiential learning, developing interprofessional self-confidence in dealing with emergencies in primary health care.
Descriptors: Simulation training; interprofessional education; self-confidence; primary health care.

RESUMO
Objetivo: verificar se a estratégia de simulação empregada para capacitação em suporte básico de vida e situações de obstrução de vias aéreas interfere na autoconfiança interprofissional no âmbito da atenção primária à saúde. **Método:** estudo quase-experimental desenvolvido com 68 profissionais da atenção primária do Distrito Federal, entre junho e dezembro de 2018. Utilizaram-se questionários para caracterização do conhecimento e avaliação da autoconfiança. Realizou-se aula expositiva e simulação realística sobre parada cardiopulmonar e obstrução de vias aéreas como intervenção, sendo significativos os resultados com diferença estatisticamente significativa antes e após (p<0,05). **Resultados:** amostra majoritariamente feminina (69,1%), com idade entre 21 e 70 anos, com predomínio de agentes comunitários de saúde (32,4%). Houve melhora na autoconfiança para o manejo correto da parada cardiopulmonar e da desobstrução de vias aéreas (p<0,001) após a intervenção. **Conclusão:** a simulação favorece aprendizagem experiencial, desenvolvendo autoconfiança interprofissional para lidar com emergências na atenção primária à saúde.
Descritores: Treinamento por simulação; educação interprofissional; autoconfiança; atenção primária à saúde.

RESUMEN
Objetivo: verificar si la estrategia de simulación empleada para el entrenamiento de soporte vital básico y las situaciones de obstrucción de las vías respiratorias interfieren con la autoconfianza interprofesional en la atención primaria de salud. **Método:** estudio cuasi experimental realizado con 68 profesionales de atención primaria en el Distrito Federal, Brasil, entre junio y diciembre de 2018. Se utilizó un cuestionario para caracterizar el conocimiento y la autoconfianza. Una intervención y una simulación realista sobre el paro cardiopulmonar y la obstrucción de las vías aéreas se realizaron como intervención, siendo resultados estadísticamente significativos diferentes antes y después de la intervención (p <0,05). **Resultados:** muestra mayoritariamente femenina (69,1%), con edades comprendidas entre 21 y 70 años. Predominaron los agentes comunitarios de salud (32,4%). La autoconfianza mejoró para el manejo correcto del paro cardiopulmonar y el despeje de la vía aérea (p <0,001) después de la intervención. **Conclusión:** La simulación apoya el aprendizaje experimental, desarrollando la autoconfianza interprofesional para enfrentar emergencias en la atención primaria de salud.
Descriptores: Entrenamiento simulado; educación interprofesional; autoconfianza; atención primaria de salud.

INTRODUCTION

Inter-professional Education (IPE) is an important pedagogical approach that prepares professionals to provide patient care by a collaborative team. It is proven that qualified teams of professionals are able to provide safer care, reduce costs and errors associated with health care[1].

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Research Article
Artigo de Pesquisa
Artículo de Investigación

Defined as a form of learning in which students or members of two or more professions learn from each other to improve collaboration and quality of care, it aims to improve attitudes, knowledge and skills for collaborative practice, which in turn can improve the clinical practice[2,3].

The integration between IPE and simulated learning has been identified as a key factor in the transformation of nursing education[4]. In this direction, simulation-based education aims to create an experience oriented to help acquire the necessary skills and ensure the patients' safety and well-being[5].

Thus, enhancing competencies and skills in real time has become a challenge, which can be achieved through the simulation strategy, as well as technically and scientifically improving the professional to reach the level of knowledge that is desirable for safety of care[6], not underestimating self-confidence, an essential non-technical skill for correct decision making and critical judgment in a clinical setting[7]. It is well known that the Basic Health Units (BHUs) comprise the point of support for the population affected by chronic diseases and, thus, a competent multi-professional team can be the differential to minimize or solve problems and complications at all health levels[8].

However, Primary Health Care (PHC) professionals come across patients in serious situations who may evolve rapidly in the absence of correct and agile interventions. In the health scope, professional qualification occupies a prominent place, especially when referring to critical situations with a risk of death[9].

In this scenario, Cardiorespiratory Arrest (CRA) and Upper Airway Obstructions by Foreign Objects (UAOFO) stand out and are among the situations that demand agility and assertive decisions from the health team to stabilize the clinical situation in any environment, especially in PHC. Such a situation reinforces that rapid and critical thinking should not be underestimated in the life-saving process, so that team building represents the target for reducing errors and mortality rates[10].

On this perspective, it should be stressed that the need for a qualified PHC team with professionals with sufficient skills and abilities influences the effectiveness of patient safety[11]. Given this, the simulation, emphasis of the present study, emerges and stands out as a key mediator for achieving experiential learning in a safe and supervised setting[12]. However, exposing PHC professionals to simulated emergency situations, realistically reproduced through simulated training, has proved to be an opportune proposal for the development of self-confidence and clinical and critical thinking in problem solving.

In this context, the objective of the present study was to verify if there is a gain in self-confidence in emergency situations through training mediated by the simulation strategy in the primary health care context.

METHODOLOGY

This is a non-equivalent quasi-experimental study conducted with health professionals working in Basic Health Units (BHUs) in the western region of the Federal District, from June to December 2018. The non-probabilistic convenience sample consisted of 68 professionals (nurses, nursing technicians, community health agents (CHAs), dentists, psychologists and physicians). Those who were on vacation or on work leave and who did not completely fill the data collection instruments were excluded.

A structured questionnaire was adopted with personal identification items, knowledge about Basic Life Support (BLS) in cardiology and Upper Airway Obstructions by Foreign Objects (UAOFO), as well as an emergency self-confidence 5-point scale of the *Likert* type, 1 being "not confident" and 5 "extremely confident". This scale was developed in 2006 and has content validation for the Portuguese language, with internal consistency demonstrated by the global Cronbach's Alpha of 0.918[7,13]. Its development was associated with the need to evaluate the self-confidence variable in graduating students, here adapted for professionals in four dimensions: (1) recognition of signs and symptoms, (2) accurate patient assessment, (3) appropriate intervention to the demand and (4) evaluation of the effectiveness of interventions in the respiratory, cardiac and neurological spheres.

The intervention was a combined theoretical-practical strategy, consisting of lecture-dialog and hybrid simulation stations, combination of a live actor and patient simulator, for the realization of training, aiming to develop non-technical skills, represented here by self-confidence in critical situations care. For this, the international BLS and UAOFO[14] guidelines were adopted for the multi-professional team based on the inter-professional education strategy.

The operationalization of data collection was guided by phases. Thus, in Phase 1, as a triggering strategy, visits and sensitization of the BHU managers were carried out in order to release the multi-professional team on scheduled days to reach the professionals of all the BHUs in the western region of the Federal District.

Research Article
Artigo de Pesquisa
Artículo de Investigación

In Phase 2, application of the questionnaire and emergency self-confidence scale to professionals in a private environment of the BHU by the students of the academic league, under teaching supervision, lasting 60 minutes.

In Phase 3, a 40-minute lecture with dialogs was given with the aid of multimedia. The intervention was developed by students from an academic league specializing in realistic simulation, trained and supervised by teachers, with expertise in the area of simulation and emergencies, from a public college education institution.

In Phase 4, the professionals were randomly allocated and distributed in groups of four participants in three practical stations: (1) basic adult life support; (2) basic pediatric life support and (3) upper airway obstructions by foreign objects. All the stations were conducted by the league students under teaching supervision in different rooms of the BHU, in order to ensure privacy for the performance and discussion of the proposed clinical situation. In these stations, there was a demonstration of simulated practices necessary to acquire self-confidence in the care of BLS and UAOFO, based on the use of patient simulators and live actors. At the end, the *debriefing* was made, a moment of reflection on self-confidence about the practices experienced in each practical season, lasting 30 minutes.

In Phase 5, post-intervention, the self-confidence scale was re-applied to evaluate the post-training self-confidence profile, lasting 60 minutes.

The data were tabulated in *Microsoft Excel®* 2016 spreadsheets and analyzed with the help of the *Statistical Package for the Social Sciences* (SPSS), version 23. Normality distribution was assessed by the Kolmogorov Smirnov test. Descriptive analysis was performed with calculation of summary measures (absolute, relative and median frequencies) and dispersion measures (25 and 75 percentiles). In the statistical analysis, given the asymmetric distribution, the Mann-Whitney test was used for comparison between groups, and the Wilcoxon Signed Ranks for intra-group comparison. Results with $p < 0.05$ were considered significant.

All the professionals were guaranteed anonymity, as well as the right to withdraw from the research at any phase. All expressed their acceptance to participate by signing the Free and Informed Consent Form (FICF). The study was approved by the Research Ethics Committee under opinion number 1,207,279 and CAEE 47489415.8.0000.5553.

RESULTS AND DISCUSSION

The results of this study showed the effectiveness of using the realistic simulation strategy in the development of self-confidence in the PHC professionals about BLS and UAOFO. The characteristics of the study participants are presented in Table 1.

From the 68 participating professionals, most were in the position of Community Health Agent (CHA) (32.4%), nursing technician (20.6%), nurse (14.7%) and physician (13.2%). Although the age of the professionals ranged from 21 to 70 years old, there was a predominance of the age group from 31 to 40 years old. Most were female (69.1%), with a training time of 5 to 10 years (35.3%). Of the total, 30.9% of the professionals reported having attended some specialization (*lato sensu* graduation) and the length of professional practice in PHC was predominantly between 5 and 10 years.

The data regarding the assessment of inter-professional self-confidence and the comparison with the CHAs are presented in Table 2.

It was found that the professionals' self-confidence to deal with situations involving BLS and UAOFO improved significantly ($p < 0.001$), progressing from 2.3 (1.9 – 3.0) in the pre-intervention stage to 3.0 (2.7 – 3.4) in the post-intervention stage.

In the context of PHC, this study identified that the Community Health Agents (CHAs) had lower self-confidence to provide emergency care when compared to other health professionals, and this difference was significant at pre- ($p=0.001$) and post-intervention ($p=0.005$) moments. However, at post-intervention a significant improvement in self-confidence among the CHA ($p=0.002$) and Non-CHA ($p<0.001$) professionals has been verified.

The self-confidence of professionals in situations related to care directed to situations that required BLS and UAOFO showed a progressive improvement. The training allows professionals, when exposed to a simulated, near-real situation, to gain the chance to learn from instruction and clarification reducing the risk of patient injury[10].

A study carried out at the Children's Hospital of the state of Paraná concluded that the simulation favored the development of self-confidence by mediating the approach of managers with the work teams, improving communication, analyzing conflict situations, overcoming barriers, developing attitudes and specific skills, as well as providing a safe and reliable environment for the procedures, allowing for the identification and reconstruction of concepts and conducts[15].

TABLE 1: Sociodemographic and training characteristics of the health professionals of the Basic Health Units. Brasilia, DF, Brazil, 2018 (N=68).

Variables	n	f(%)
Female gender	47	69.1
Age group		
21 ⊢ 30 years old	7	10.3
31 ⊢ 40 years old	31	45.6
41 ⊢ 50 years old	20	29.3
51 ⊢ 60 years old	5	7.4
61 ⊢ 70 years old	3	4.4
Did not answer	2	2.9
Training		
Community Health Agent	22	32.4
Nursing Technician	14	20.6
Doctor	9	13.2
Care Nurse	8	11.8
Dentist	6	8.8
Oral Health Technician	3	4.4
Nurse Manager	2	2.9
Administrative Technician	2	2.9
Did not answer	2	2.9
Time of training (years)		
5 ⊢ 10 years	24	35.3
11 ⊢ 15 years	19	27.9
1 ⊢ 5 year	5	7.4
Up to 1 year	2	2.9
Did not answer	5	7.4
***Lato sensu* graduation**		
Specialization	21	30.9
Others	1	1.5
Did not answer	46	67.6
Professional acting time in primary health care		
5 ⊢ 10 years	29	42.6
11 ⊢ 15 years	12	17.6
1 ⊢ 5 years	10	14.7
Up to 1 year	7	10.3
Over 15 years	5	7.4
Did not answer	5	7.4

TABLE 2: Difference in the evolution of self-confidence in inter-professional emergency care in primary care from pre- to post-intervention. Brasilia, DF, Brazil, 2018 (N=68).

	Pre-intervention Median (25-75 percentiles)	Post-intervention Median (25-75 percentiles)	p
General evaluation	2.3 (1.9 – 3.0)	3.0 (2.7 – 3.4)	<0.001*
CHA evaluation by other professionals			
Non-CHA (n=46)	2.5 (2.0 – 3.0)	3.2 (2.8 – 4.0)	<0.001*
CHA (n=22)	1.9 (1.3 – 2.2)	2.9 (2.5 – 3.0)	0.002*
	p = 0.001**	p = 0.005**	

Notes: CHA – Community Health Agent.
*Wilcoxon Signed Ranks Test; **Mann-Whitney test.

A similar finding was identified in the present study, where the simulation strategy allowed for the development of self-confidence in the clinical practice. This is an essential condition when considering the multi-professional team, which works in PHC, a place with a high demand and a current need for training to update conducts from evidence-based guidelines, as well as the consolidation of teamwork to ensure a more reliable and safer care[16].

In addition, the importance of simulation as inter-professional training can be applied to nurses, technicians, assistants and even staff from other sectors, such as administrative units, managers, executives, hospital administrators, regulators and legislators. For these groups, it is believed that simulation can reproduce the complexities of clinical work, and then be adopted for the exercise of organizational practices of clinical institutions[15,17], as developed in the present study

For the professionals, the practice of simulation is an excellent opportunity to share knowledge, exchange experiences and improve skills. A number of studies that used the realistic simulation strategy as a professional training vehicle state that it was possible to identify knowledge gaps, difficulties in performing procedures, learning needs, training and review of techniques, a strategy that has allowed for the reconstruction of knowledge through questionings and reflections[18,19].

When realistic, and since they mimic real performance, the simulations can contribute both to increasing self-confidence and to reducing anxiety and fear[20,21]. In the present study a significant gain of self-confidence regarding knowledge of the BLS and UAOFO guidelines was identified. The simulated scenario provides a safe and controlled environment where the health care professionals can bring theory and clinical practice together without fear of harm to the patients[22,23].

A study conducted in California with a multi-professional team showed a significant improvement in the response time of the professionals in the first five minutes of emergency care after the simulated training. It is noteworthy that, among the selected scenarios, in ventricular fibrillation, the team presented mainly a reduction in the time of onset of compressions and agility in requesting help[24]. These findings, as well as those of the present study, show the gain in safety in the professional practice, regarding the performance of procedures more effectively, quickly and safely.

The training of a multi-professional team mediated by simulation to improve care for violent patients, for example, can provide gains in skills enhancement and contribute to the team's difficult coping with patients from gains related to knowledge, confidence, preparedness, and personal safety[25]. In our study, even among professionals without college education, such as community health agents, there was a significant gain in self-confidence after training for emergency care.

Regardless of their role, updated knowledge and constant practice are required from the health professionals to develop their self-confidence during the care process. The large-scale simulation recreates the elements of a multi-professional team training situation and is thus recognized as an effective method[26].

The development of self-confidence is fundamental for assertive decision making and for the resolution of judgment processes in a clinical context. Several studies show that self-confidence in emergencies increases when factors such as repeated practice and training based on simulation strategy are present[10,27,28]. The conditions offered to the PHC multi-professional team to develop not only cognitive skills, but also self-confidence, enable the advance in the practice of care through a collaborative process[29].

As limitations, this study presented technical and structural difficulties in the Basic Health Units to implement the simulation strategy, in addition to the absence of some professionals in the days provided for the development of the proposal. Nevertheless, it was found that the training allowed the BHU professionals to have contact with equipment, such as patient simulators and updated knowledge, apart from promoting reflection among managers and the multidisciplinary team about the advances and updates of the care process in critical situations.

CONCLUSION

The realistic simulation method adopted for the training of professionals aimed at assisting CRA and UAOFO situations improved self-confidence to cope with critical and risk situations.

The development of self-confidence directed to the health practices enables quality care with less chance of errors. To work in clinical practice, the health professionals need to be scientifically updated and safe in their actions, in order to have agility and skill in care.

Repeated practice and within an environment close to the real, like the simulation, allows the professional to perform actions, making it possible to reflect upon it as a strategy to add knowledge. The training mediated by simulation represents an opportunity for the multi-professional team to share experiences and learn safely, both technical and non-technical skills, represented here by self-confidence: the aim of this study.

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Simulation and interprofessional self-confidence

Research Article
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