

Team Learning-TBL: educational strategy for community health agents about craniofacial anomalies

Team-based Learning-TBL: estratégia educacional para agente comunitário de saúde sobre anomalias craniofaciais

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Abstract

Introduction: The Community Health Agent has a direct link with community and health services. Thus, constant updates on new themes to act in health promotion and prevention is fundamental, one of which is the craniofacial anomaly. **Objective:** To verify the adhesion of Team-Based Learning-TBL in an improvement program with Community Health Agent about craniofacial anomaly. **Method:** It is an improvement of two meetings with pre and posttest in a single group using the TBL methodology. The themes defined were: concept of craniofacial anomaly, causes, prevention and treatment. For statistical analysis, Epi-Info 3.5.1 was used for the Microsoft Excel 2007® program, Friedman test, Cochran test and McNem. **Results:** The sample consisted of 27 Community Health Agents corresponding to the Family Health Strategies linked to the IMIP Hospital. The course participants were both genders, with an average age of 41.7 years, a level of education prevalent in high school and an average of 17 years of experience. In the period evolved to improvement there was a low percentage of correct answers, while in the post period, an increase above 70%. As for the use of TBL, observed almost 90% and 100% of correct answers individually and in a group, respectively, with difficulties in the individual stage regarding the description of the craniofacial anomaly, breastfeeding and reference place for treatment, respectively. **Conclusions:** The results of this study prove the good adherence of TBL in improvement with CHA on the theme of craniofacial anomaly.

Keywords: Community Health Agents, Craniofacial Anomaly, Improvement, Problem-Based Learning.

Resumo

Introdução: O Agente Comunitário de Saúde (ACS) possui vínculo direto com a comunidade e o serviço de saúde. Desse modo, constantes atualizações sobre novas temáticas para atuarem na promoção e prevenção de saúde é fundamental, sendo uma delas a anomalia craniofacial. **Objetivo:** Verificar a adesão do *Team-Based Learning (TBL)* num programa de aprimoramento com ACS sobre anomalia craniofacial. **Método:** Trata-se de um aprimoramento de dois encontros com pré e pós teste em grupo único com uso da metodologia *TBL*. Os temas abordados foram: conceito sobre anomalia craniofacial, as causas, condutas de prevenção e tratamento. Para análise estatístico foi utilizado o Epi-Info 3.5.1 para o programa Microsoft Excel 2007®, teste de Friedman, Teste de Cochran e McNem. **Resultados:** A casuística constou de 27 ACS correspondente as Estratégias de Saúde da Família vinculadas ao Hospital do IMIP. Os cursistas eram de ambos os gêneros, com idade média de 41,7anos, nível de formação prevalente ao ensino médio e média de 17 anos de experiência. No período prévio ao aprimoramento houve um baixo percentual de

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acertos, enquanto no período pós, uma elevação acima de 70%. Quanto a utilização do *TBL*, observado quase 90% e 100% de acertos individualmente e grupal, respectivamente e observado dificuldades na etapa individual quanto a descrição da anomalia craniofacial, amamentação e local de referência para tratamento. **Conclusões:** Os resultados deste estudo comprovam boa adesão do *TBL* em aprimoramento com ACS sobre a temática da anomalia craniofacial.

Palavras-chaves: Agentes Comunitário de Saúde, Anomalia craniofacial, Aprendizagem Baseada em Problema.

Introduction

The community health agent (CHA) is one of the professionals who are part of the minimum team of the Family Health Strategy (FHS) with the proposal to contribute to the change of the biomedical model in a broader view, since it has technical and popular knowledge of the reality of their territory providing better assistance to families in the community^{1,2,3}. However, the existence of this professional was given due to the positive experiences of the pastoral agents of the child that it is a social action device of the National Conference of Bishops of Brazil (CNBB), which accompanies children and pregnant women in conditions of health, education, food, citizenship with the initial objective of reducing infant mortality and encouraging breastfeeding in the northeast of the country. With that, in 1991, the Ministry of Health made the role of the CHA official and was inserted in the minimum team of the FHS shortly after the officialization of the latter^{4,2}.

The practice of these workers is linked to the activities developed in the FHS with biological, individual and family character⁵. In spite of this, training on new topics for action in health promotion and prevention is scarce and when they exist they are superficial and focused on specific realities. Thus, it is essential for primary care professionals regardless of their training to make constant updates so that it is possible to meet the needs of the community with quality and, consequently, get qualified on health practices^{6,7}.

In view of this reality, the Permanent Health Education (EPS) program can be a strategy to improve

CHAs on current issues, including craniofacial anomaly^{8,9}. Thereby, to present these professionals on topics that cover the reality of the population can be an alternative of better assistance to users, since they are the link between the ESF and the community.

EPS acts as a tool in order to improve the quality of services, aiming to achieve equity in care, making professionals more qualified to meet the needs of the population, starting from the reflection on the reality of the service and the existing needs, and then formulating strategies to help solve problems. EPS has been improving the educational method and presenting itself widely porous to the multiplicities of the reality of professional experiences, placing itself in alliance with integrated projects between the sector/world of work and the sector/world of education¹⁰.

The expansion of learning scenarios and the enhancement of in-service teaching require a change in the paradigms admitted in health education^{10,11}. Thus, constant updates are needed on new themes for the performance of these professionals in health promotion and prevention, covering the needs of the community and qualifying them for good health practices.^{7,8} In contrast, the subject craniofacial anomaly does not match the formation of CHA, but they can mediate knowledge about content through educational strategy Enhancement^{8,9}.

Craniofacial anomaly is considered one of the most frequent human birth defects, driven by the abnormal growth and/or development of the structures of the soft parts of the head and face and/or bones^{6,12}. According to the World Health

Organization (WHO), it states that craniofacial anomaly is recognized as an important public health problem, due to non-treatment or inefficient treatment^{10, 11}. Due to the high percentage, about 70% of birth defects can be prevented or their impact minimized in terms of early mortality, through improvements in the quality of health care^{14, 15}.

Thus, improving these professionals can be done through several teaching methodologies, but it is necessary to develop educational strategies that contribute to an active learning process and inquire about pre-existing knowledge. With that, this study used the *Team-Based Learning- TBL*, as is an educational strategy consisting of a set of practices and is divided into three stages. O *TBL* aims to promote the development of high-performance learning teams and provide these teams with opportunities to engage in meaningful learning tasks¹⁶.

In this model, the first step is preparation, which is done by the student's prior preparation for a task proposed by the researcher outside the collective study environment. The second is the guarantee of preparation, which consists of an individual test and afterwards in a team, with feedback, both being performed in a study environment. Finally, the application of concepts involves the execution of several team tasks proposed by the teacher, which usually involve problem solving and decision making, followed by a presentation and feedback. All processes that occur in these phases are evaluated^{16, 17}. Within this context, this research aimed to verify adhesion of *TBL* in an improvement program with CHA on craniofacial anomaly.

Methodology

This is a cross-sectional, descriptive study, with a quantitative approach carried out in the FHS linked to Instituto de Medicina Integral Prof. Fernando Figueira (IMIP) from October to

December 2019. The participants were informed about the objectives, risks and benefits of the research and those who agreed to participate signed the Free and Informed Consent Form (ICF), before the start of data collection. The study was approved by IMIP Research Ethics Committee number 46848415.0.0000.5201 and received approval from the city's Health Department.

The sample comprised 32 CHAs corresponding to three urban ESF divided into three groups for better application of the methodology and use of the content. Five participants who did not accept to participate in the research or who did not attend all meetings were excluded.

In order to achieve the research objectives, two meetings were held based on active methodologies, in face-to-face format, totaling eight hours of activities performed in the ESF corresponding to the CHAs. For this, the content taught was divided into "concept of craniofacial anomaly" and "causes" for the first moment and "prevention steps" and "treatment" for the second moment.

The actions carried out during the study were supported by the *TBL*^{16, 17}, following this procedure: in the first meeting the storm of ideas was carried out in order to stimulate thinking about the content to be worked on and outlined the objectives to be achieved and discussed in the second moment. For such study of CHAs, basic material was made available "*Manual of health care and feeding of the child with oral cleft*" of Crânio- Face Brasil project¹⁵ as well as left free and stimulated the research for discussion at the next moment. Thus, in the second meeting, the second stage of the methodology of *TBL* with the application of an individual evaluation with ten multiple-choice questions developed by the researcher (Chart 1) and then, the use of it in small groups in order to generate discussions about the content and consensus of a single correct alternative. Subsequently, the feedback with support

from the mediator in conducting discussions about doubts, myths and truths, questions raised between groups about the

content worked and, thus, the conduction and conclusions about the theme addressed were carried out.

Table 1. Individual/group evaluation of *TBL* state

Quiz						
Participant:						
Alternative No.	A	B	C	D	Score (individual)	Score (team)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
1. What is craniofacial anomaly? a, Face change b, Alteration in the upper and lower limbs c, Malformation d, All of the above						
2. Which of these factors does not give rise to craniofacial anomaly? A, alcohol b, Folic acid c, Use of medicines d, Malnutrition						
3. During pregnancy, many women listen to advice and tips on how to have a good pregnancy. Check which option is related to popular belief. a, cigarette smoking, alcohol and drug use b, Genetic and hereditary problem c, Make use of folic acid and good nutrition d, Look at eclipse, sewing button on the clothes you are wearing and key on the chest						
4. Doesn't the pregnant woman need to take folic acid after discovering she is pregnant? a, True b, False						
5. Shouldn't the pregnant woman take medication without a prescription and should she avoid using alcohol, cigarettes and drugs during pregnancy? a, True b, False						
6. How old should treatment be started? a, in childhood b, in adolescence c, Soon at birth d, In adulthood						
7. What would be the last option for a baby with cleft lip and palate to be fed? a, In traditional mode b, Use baby bottles c, In the 90° position (seated and postured) d, Use of probe						

<p>8. What changes can a child with cleft lip and palate without syndrome present? a, Change to walk b, Difficulty speaking, eating and hearing c, Difficulty in the upper limbs d, Motor alteration</p>
<p>9. How can you help? a, Forwarding to the reference center b, Only be accompanied at the UBS c, Do not follow this case d, All options</p>
<p>10. What is CADEFI? a, House of children and adolescent b, Elderly care center c, Center for attention to defects on the face of IMIP d, Craniofacial anomalies care center</p>

Source: Research data

Also during the improvement, a data collection instrument was applied in two moments: at the beginning and end of the improvement. The questionnaire used was based on the previous study by Neves⁶, in which the authors investigated the perception of community agents on aspects related to previous knowledge and after the education strategy on craniofacial anomaly.

The questionnaire for this study comprised two parts, the first of which was aimed at collecting data regarding the profile and performance of CHA, observing the characteristics of age, gender, education and length of experience in the FHS. The second part had seventeen closed questions, referring to situations in which the CHA can experience in their daily practice related to craniofacial anomaly in which the participant should respond with the following answer

possibilities: true or false and multiple choice alternatives. The CHA answered the questionnaire individually, during the periods already mentioned, and in the event of difficulties or doubts, the researchers explained the content of the question. The study data was stored in a public domain statistical program database Epi-Info 3.5.1 for the Microsoft Excel 2007® program.

Results

The sample included 27 CHAs, all respondents were of both genders, aged between 31 and 61 years (average = 41.70), level of education between high school and higher education and with years of experience between 6 and 27 years (average = 17.07).

Table 1 - Characteristics of the Community Health Agent

Variable	Category	n	%	Average (SD)
Age (in years)	20 to 39	6	22.2	47.03 (8.86)
	40 to 59	19	70.3	
	> 60	2	7.4	
Education level	Complete High School	16	59.2	
	Complete Higher	3	11.1	
	Technical	7	25.9	
Working time as CHA (in years)	1-9	7	25.9	
	10- 19	10	37.03	
	> 20	10	37.03	

Legend: N = number of subjects; SD = standard deviation; CHA = Community health agent
Source: Research data

The average of correct answers in the second moment of application of the questionnaire in comparison to the first moment of the improvement was higher. There was a difference between the results (Table 2) as well as the minimum average of correct answers in the first and second moments, showing that the CHA acquired knowledge through the improvement of the craniofacial anomaly, as indicated by the statistical analysis shown in Figure 1.

It should also be noted that only 4 subjects (14.8%) had a percentage of more than 70% correct answers in the questionnaire prior to improvement. While in the post, it was noticed that the 27 subjects (100%) presented a percentage higher than 70% in the same questionnaire applied after the improvement.

Table 2 - Comparison of correct answers between the start and finish of the improvement

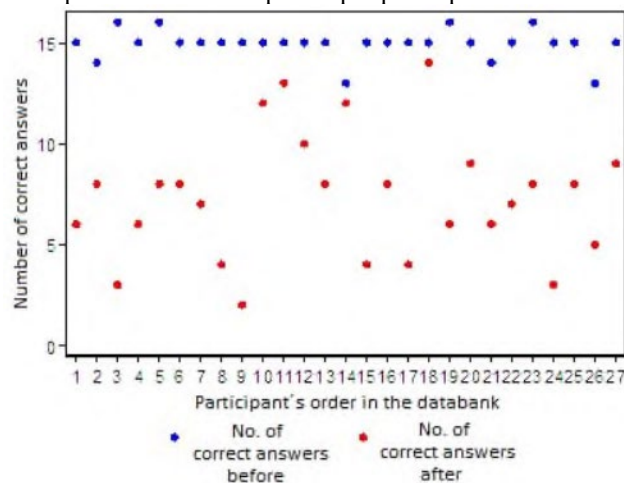
Correct answers	Pre-enhancement	Post-enhancement
Average of correct answers (SD)	7.37 (3.17)	15.96 (0.7)
Maximum value	15	17
Minimum value	2	14
Median	8	16

* Statistically significant values ($p \leq 0.05$) - Friedman test

Legend: SD = standard deviation

Source: Research Data

Figure 1- Pairs of correct answers in the pre X post-enhancement period per participant.



Source: Research Data

As for performance in the issues addressed in the application of *TBL* it can be seen that in activity number one, seven and ten was one of the questions that showed a difference between individual and group application. The question addressed how definition, food and reference network for referral of cases with craniofacial anomaly, presented significant value. An increase in the number of correct answers can be observed in most questions, between the moment of individual and group application of the evaluative activity (Table 3).

Table 3 - Comparison of individual and group scores in relation to questions with a higher percentage of error in the assessment applied by the *Team-Based Learning- TBL*.

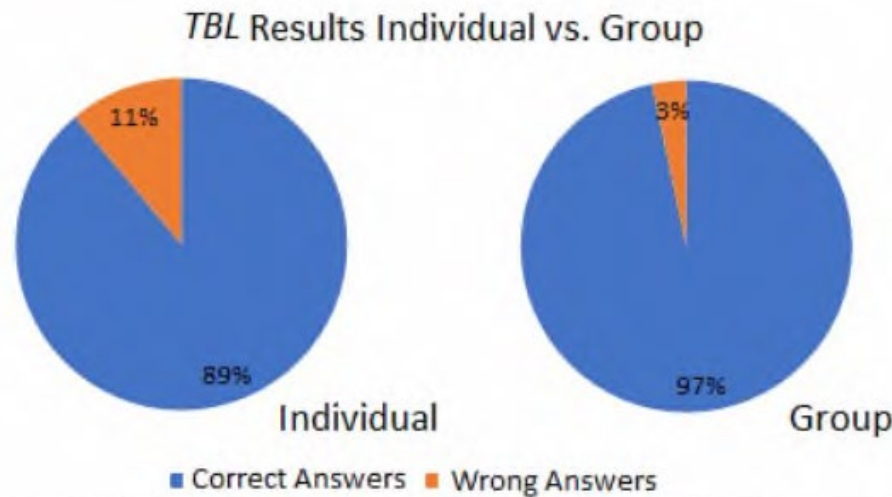
Question	Category	Individual application		Group application	
		n	n%	n	n%
What is craniofacial anomaly?	Definition	13	48.1	0	0
What would be the last option for a baby with cleft lip and palate to be fed?	food	7	25.9	4.5	16.6
What is CADEFI?	Reference network	6	22.2	4.5	16.6

* Statistically significant values ($p \leq 0.05$) - Cochran and McNem test.
 Legend: N = number of subjects
 Source: Research data

The figure below the drawing shows the use of *TBL* during individual and group application. It is possible to verify that it is an effective approach, in

view of a considerable percentage of almost 90% and 100% of correct answers individually and in a group, respectively.

Figure 2. Result *Team-Based Learning- TBL* Individual vs. Group.



Source: Research Data

Discussion

The CHA acts as a fundamental element in the FHS, seen as an important mediator in its territory, as it is responsible for monitoring families in a certain area and has a specific role within the health unit. Thus, the improvement aimed to

encompass the theme about craniofacial anomaly in a didactic, simple way and with the use of *TBL* in order to bring these professionals together on a topic not discussed in their training books^{1, 6, 18}.

When characterizing the CHAs, it was possible to verify that most of these professionals interviewed have high school

education in their highest degree, Table 1. In this same view, a study produced with 38 CHAs¹⁹ found that 61.5% of professionals had completed high school, which is similar to another survey conducted with 31 CHAs²⁰ with the same degree of education, 54.8%. Out of these interviewed professionals, the level of education can be marked by greater accessibility to the education offered by the education network, by a greater technical-scientific interest and also, the regulation of education described in the law for the performance of this professional category²¹.

An improvement with CHAs carried out in the state of Pernambuco⁸ found some difficulties and myths related to craniofacial anomaly in the period prior to data collection, which can be justified that most CHAs have never received improvement with a theme related to craniofacial anomaly and being similar to that observed in the present study, Table 2.

It is common for health agents in their micro-coverage area to identify referral needs, but they do not have a perception of many situations of risk to human communication, which weakens the guidelines or adequate guidance²⁰. From this perspective, it is believed that it is essential that these professionals undergo training that inquires about pre-existing knowledge and encourages empowerment in the face of the content presented in the improvement. For this, the questionnaire applied to measure the level of knowledge of each CHA about craniofacial anomaly prior to improvement was noted a marked number of doubts and non-real concepts about craniofacial anomaly, Figure 1.

Still, it is possible to observe, through the improvement made, a difference between the general performance obtained at the beginning and at the end of it, and this result corroborates with the findings of other studies.^{6,20}. According to the literature, CHAs do not have qualifications that allow them to be able to have a skill that corresponds to the

demands presented daily, such as craniofacial anomaly^{1,6}. Thus, it implies the importance and the need for health management to establish measures in EPS to change the professional practice generated by educational actions in the work environment.²².

Studies also point out that these professionals have reduced knowledge about craniofacial anomaly, highlighting many of their technical-scientific knowledge come from team experiences and popular knowledge embedded in local culture.^{23,24}. However, allowing the development of the critical capacity of professionals through media resources and permanent education in the health education strategy is a way of promoting the construction of concepts in practice²⁵.

Thus, the use of *TBL* was a method used in order to stimulate the pre-existing knowledge and also to provoke the interaction between the participants of the improvement. In view that, studies related to the use of *TBL* in the formation of CHA, however it is a tool that has been gaining prominence and studies on the use of this methodology in higher education health centers^{15,17}.

When using this active teaching-learning methodology with CHAs, it was possible to notice in the individual application a higher number of errors, when compared to the same overlapping assessment in group, Table 3. The percentage error data presented in the individual assessment show 48.1% of distortion in face of the concept of craniofacial anomaly, followed by questions related to food and reference center with 25.9% and 22.2%, respectively. However, when the evaluative activity was applied in a group, observed 16.6% maintained misconceptions regarding food and a reference center.

In such a case, the group activity presented a better percentage, having already been described in the literature that dynamic group activities make the participants have a better exchange of their

knowledge, in organizing the concepts and it is possible to verify effectiveness in the most articulated way regarding the knowledge necessary to respond to the studied health needs and demands and assist in transforming the reality of local living and health conditions^{17, 26}. When verifying Figure 2, it was possible to verify that the application of *TBL* provided a good answer for the participants of this study, with a high percentage of correct answers in the individual stage with 240 (89%) assertive responses out of a total of 270 (100%), but also in groups, 5 (97%) had 100% correct answers, while 1 group (3%) answered 8 questions (80%) of the activity correctly.

Educational strategies in the active model are a format that can be viewed positively as shown in some studies applied in different areas of knowledge³. When correlating data exposed in Table 2 and Figure 1, it is possible to see a significant increase in the level of knowledge of respondents regarding the theme of craniofacial anomaly in the post-improvement period. Therefore, it predisposes the validity of using the health education strategy used through the tele-education tool as feasible and positive for the improvement of CHA^{9, 27}.

The use of active health teaching methodologies with the use of a pre and post questionnaire to measure effectiveness shows in the literature efficacy in content absorption, equivalent to that expressed in this study, with a high rate of errors in the alternatives previously answered and a reduction in post improvement, Figure 1^{6, 8, 27}. However, it was found that a large part of the participants managed to aim for the exodus in the counter test applied in the post-improvement, however some remained with some doubts regarding the food and the location of the reference center, being observed both in the evaluation application *TBL* and in the post-improvement questionnaire, with a lower percentage of errors in the latter.

Thus, the erroneous data collected may be associated with the practice or little experience regarding the items. The permanence of these unreal concepts about posture in the feeding of the child with craniofacial anomaly can be hypothesized, “Was the past concept not enough to supply this demand?”, “The participants generalized the food posture only for the most common anomaly that is used in cleft lip and palate? ”.

However, the process of improvement in dynamic health, the use of this methodology provided the subject as an actor of this learning, a better absorption of the content covered and favoring an effective practice.

Health education practices establish an important alternative to improve the access of workers in the Unified Health System to EPS with benefits to professionals in the exercise of reflective theoretical discussions, based on the needs of the population involved and stimulating the expansion of knowledge learned to a greater number of people²⁸.

As the CHAs in this study participated in only two modules for two weeks, it was not possible to apply strict control in the activities of these professionals developed in post-improvement. What prevented it from analyzing whether or not everyone had the same opportunity to apply the content, which involves the scope of the area of operation, number of families visited, contact with children with craniofacial anomaly, among others. Thus, the design of new research involving improvement for the CHAs related to the community demands, should include a longitudinal scale to verify the effectiveness in problematizing the experienced area. Thus, it is emphasized the importance of future studies to control the activities performed by professionals after improvement.

Therefore, new scientific analyzes and investigations are necessary, including this model of health education and the use

of this tool with other health professionals on the subject to verify possible benefits in the practice of primary care.

Conclusion

The results of this research showed a good adhesion of *Team-Based Learning-TBL* in this improvement program with a Community Health Agent on craniofacial anomaly. Thus, it can be concluded that the improvement carried out allowed an

approximation of the CHAs regarding to content addressed and was a valid tool and accepted by the participants, just because, it provoked discussions about the issue.

However, there is a need for permanent education for these professionals in different areas of health, making them include in the repertoire of information, which are capable of promoting health, since the CHA is an actor who plays a fundamental role in the Unified System of health.

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Conflict of Interest Guidelines:

I present that the article entitled "**Team-Based Learning-TBL: educational strategy for community health agents on craniofacial anomalies**" has no conflict of economic, ethical and operational interests that compromise the reliability of the data and its scientific exemption, both in its analysis and presentation.

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