POSTURAL EDUCATION IN CHILDREN: COMICS VERSUS PUPPET THEATRE

Ensino de hábitos posturais em crianças: história em quadrinhos versus teatro de fantoches

Enseñanza de los hábitos posturales en niños: historietas versus teatro de marionetas

Original Article

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RESUMO

Objetivo: Comparar a efetividade das histórias em quadrinhos e do teatro de fantoches na aprendizagem de hábitos posturais em crianças na idade escolar. **Métodos:** Estudo de campo, de caráter longitudinal e quantitativo, realizado em uma escola privada localizada no município de Caucaia-CE-Brasil, durante o período de fevereiro a novembro de 2012. Os alunos foram divididos igualmente, de forma aleatória, em dois grupos: Grupo A, no qual as crianças receberam informações através da utilização da história em quadrinhos; e Grupo B, no qual as crianças receberam informações através da apresentação de um teatro de fantoches. As avaliações ocorreram em dois momentos: antes e 2 meses após as intervenções educativas. As variáveis estudadas foram a avaliação da postura corporal e o conhecimento dos hábitos posturais corretos. **Resultados:** Participaram do estudo 52 crianças de ambos os gêneros. Observamos que tanto as crianças do Grupo A como as do Grupo B aprenderam sobre os hábitos posturais corretos. No Grupo A, apenas 23% (n=6) tiveram alguma dificuldade no entendimento das imagens e 58% (n=15) afirmaram que melhoraram a forma de andar e sentar. No Grupo B, 12% (n=13) relataram que tiveram alguma dificuldade no entendimento da linguagem e 50% (n=13) que melhoraram a forma de andar e sentar. **Conclusão:** Os achados deste estudo revelaram que as duas formas de estratégia mostraram-se efetivas para ensinar e fixar conceitos sobre os hábitos posturais corretos.

Descritores: Educação em Saúde; Postura; Prevenção Primária.

ABSTRACT

Objective*: To compare the effectiveness of comics and puppet theatre in postural education in school-age children.* **Methods***: Field study of longitudinal and quantitative approach, carried out in a private school located in the city of Caucaia, Ceará, Brazil, in the period from February to November 2012. The students were equally divided, at random, into two groups: Group A, in which the children received information with use of comics; and Group B, in which the children received information through a puppet theatre presentation. The evaluation occurred at two moments: prior to and two months after the educational interventions. The studied variables were the body posture assessment and the knowledge of correct postural habits.* **Results***: The study comprised 52 children of both genders. It was observed that children of both group A and group B learned about the correct postural habits. In Group A, only 23% (n=6) had some difficulty in understanding the images and 58% (n=15) said they improved their way of walking and sitting. In group B, 12% (n=3) reported some difficulty in understanding the language and 50% (n=13) stated they improved their way of walking and sitting.* **Conclusion***: The findings of this study revealed that the two forms of strategies were effective for teaching and retaining concepts on correct postural habits.*

Descriptors*: Health Education; Posture; Primary Prevention.*

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RESUMEN

Objetivo: *Comparar la eficacia de las estrategias de las historietas versus teatro de marionetas en el aprendizaje de hábitos posturales en los niños en edad escolar.* **Métodos:** *Estudio de campo de carácter intervencionista y longitudinal con el análisis cuantitativo de los resultados realizados en una escuela privada situada en el municipio de Caucaia-CE-Brasil durante el periodo de febrero a noviembre de 2012. Los estudiantes se dividieron por igual en dos grupos: grupo A en el que los niños recibieron información a través de la utilización de historietas y los niños del grupo B que recibieron información a través de la presentación de un teatro de marionetas. Las evaluaciones se dieron en dos momentos: antes y dos meses después de las intervenciones educativas. Las variables estudiadas fueron la evaluación de la postura corporal y el conocimiento de los hábitos posturales correctos.* **Resultados***: El estudio incluyó a 52 niños de ambos sexos, se observó que los niños de los grupos A y B aprendieron acerca de los hábitos posturales correctos. En el grupo A el 23% (n=6) tuvieron dificultad en la comprensión de las imágenes y el 58% (n=15) indicaron que mejoró la forma de caminar y sentarse correctamente. En el grupo B, el 12% (n=3) dijeron que tenían dificultad en la comprensión del lenguaje y el 50% (n=13) relató mejora de la forma de caminar y sentarse correctamente.* **Conclusión***: Los hallazgos de este estudio mostraron que los dos tipos de estrategias son eficaces en el sentido de los conceptos de enseñanza y establecimiento de hábitos posturales correctos.*

Descriptores: *Educación en Salud; Postura; Prevención Primaria.*

INTRODUCTION

The body posture of the population gives rise to a growing concern, especially when one takes into account the lifestyle to which we are submitted nowadays today[1]. This concern begins in the childhood period - the worldwide prevalence of scoliosis ranges from 1% to 2%, the idiopathic scoliosis being the most common in adolescents[2].

Improper postural habits adopted by children at home and/or school can lead to an imbalance in the body's musculature, producing postural disturbance. Physical problems initiated in the growth stage constitute a risk factor for irreversible spine dysfunctions in adulthood. Therefore, the early detection and prevention of these problems are important, in association with educational activities for proper postural habits, and physical therapy interventions, in order to prevent pain in the vertebral column of adolescents[1,3].

Health education is a teaching and learning process that aims to prevent diseases and promote health for the construction of healthy living conditions[4].

The health promotion strategy is extensive and, at school, involves various social actors, such as students, teachers, engineers, canteen owners and parents or guardians, allowing a dialogical approach to the production of knowledge in the school environment[5]. Community intervention programs addressing health promotion and prevention of diseases and disorders have been used by many countries in the world since the 1970s, grounded in the identification and confrontation of the health-disease determinants, in a continuous struggle to reduce the risk factors[6].

Aiming to optimize the process of teaching and the motivation for learning concepts related to postural habits, various learning techniques on the correct and incorrect postures are employed, such as videotapes, practical circuits, dramatization, comics, posters, booklets, demonstrations with dolls, among others. The easiness with which these instruments communicate scientific knowledge is associated with the fact that they convey information in an attractive and enjoyable way, facilitating the memorization of concepts and translating clearly the message one wants to communicate[7].

The ludic tone can be used as a communication resource in linking health information, as it awakens creativity and catches the participants' attention, encouraging more easily the active participation[7,8]. It is an essential element in working with the child; after all, childhood is the stage of human development in which the individual gets to know himself as a social being and to form a world view based on the reality in which he lives.

Thus, this study arose from the need to identify the postural habits possibly adopted by students of school age, and use interesting and didactic health education tools, in order to try to minimize the high incidence of postural disorders in adults. For this, a comprehensive study is necessary, working mainly in the preventive and educational level, enabling the change of unhealthy habits in the growth stage.

Therefore, this study aimed at comparing the effectiveness of comics and puppet theatre in postural habits learning by children at school age.

METHODS

Field study of longitudinal interventional approach, with quantitative analysis of the results, carried out in a private school located in the municipality of Caucaia, Ceará, Brazil, during the period from February to November 2012.

Children of both genders, aged between 5 and 10 years, were considered subjects of the study, since there is a

predominance of children in school in this age group, totalling 80% of children in each age group (approximately 8-10 children per age group). Children presenting neurological problems, orthopaedic deformities, and amputations were excluded, as these are disorders that would hinder the understanding of the questions or influence posture.

The study was initiated after the parents or guardians had signed the free and informed consent form. The students were then equally divided, in its totality and by age range, into two groups:

Group A: Children who received theoretical information on correct posture and relaxation, adding the use of comics (Figure 1).

Group B: Children who received theoretical information on correct posture and relaxation, adding the presentation of a puppet theatre (Dr. Ana, Tiago and Julinha), manufactured according to the topic regarding the postural habits (Figure 1).

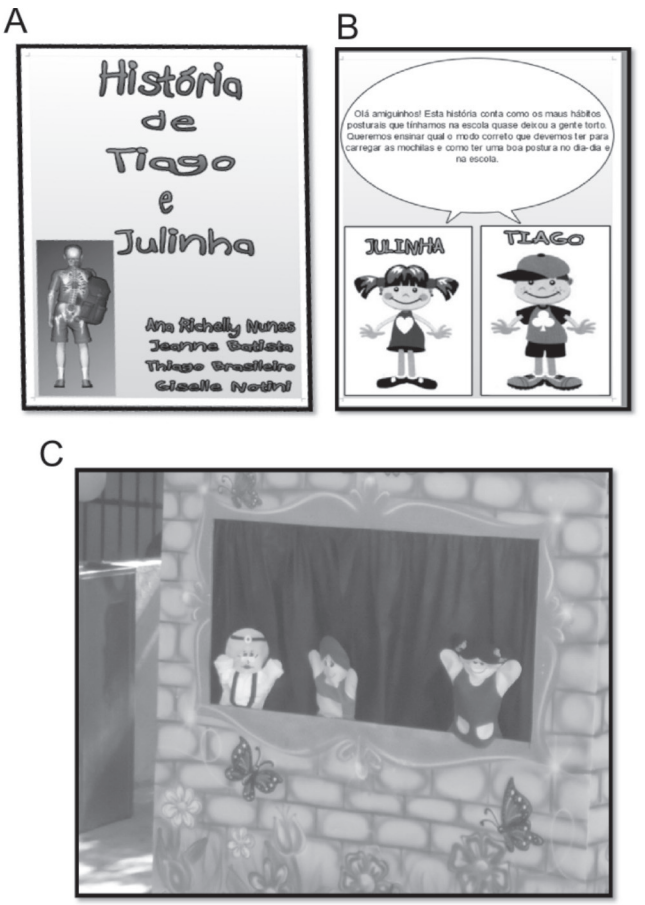

Figure 1 - Health educational strategy on the correct postural habits. A and B*: Comics; C: Puppet theatre.

(*B: Julinha and Tiago say 'Hi, buddies. This story tells you how the bad postural habits that we had in school almost got us bent. We want to show the correct way to carry the backpacks and how to have a good posture at day-to-day school.')

Data collection was performed by means of a postural assessment form in the anterior, lateral and posterior view[9,10]. For this, children used gym clothes or light clothing (shorts, t-shirts, tops). Right after, they answered an illustrative questionnaire developed by the authors, addressing the knowledge of postural habits adopted by children in different positions. It was composed of 14 closed questions and divided into 6 categories that encompass the following situations: Column, hips and feet posture *in the seated position*; head, column and feet posture *in a standing position*; way to carry backpacks; way to put down; way to move objects; and the way to sleep.

Two months after the presentation of the educational strategies, a new individual assessment was held in the school with the children initially surveyed, in order to comparatively observe the knowledge of correct postural habits between the two study groups, and their opinion on the strategies used.

Data was analysed using SPSS, version 20, adopting a significance level of 5% ($p<0.05$). Analysis of variance (ANOVA), Student's t and chi-square tests were used, according to the Kolmogorov-Smirnov normality test (KS).

The study was approved by the Research Ethics Committee of *Estácio do Ceará* University Centre (Opinion no. 02/12) in obedience to Resolution 466/12 of the National Health Council.

RESULTS

The study included 52 children (n=10 at the age of 5.7 and 9 years; n=8 at the age of 6 and 8 years, and n=6 at the age of 10 years) of both genders. In Group A, 46% (n=12) were male and 54% (n=14) females and, in Group B, 57% (n=15) were male and 42% (n=11) females; with average ages of 7.15 (± 1.64) years and 7.26 (± 1.82) years, respectively, with no significant statistical differences when comparing the mean age ($p> 0.05$).

As regards to Group A, it was found that 73% (n=19) of children reported not feeling pain in the back region and 11% (n=3) of those who felt back pain reported they used to feel it sometimes, even when lying. In children of Group B, 42% (n=11) did not feel pain, although 27% (n=7) reported feeling it sometimes, when using the computer.

Table I represents groups A and B evaluation of posture in the anterior, lateral and posterior view. It is observed that the children had a higher percentage difference between groups only on symmetry of shoulders (19%), higher left shoulder (15%) and normal knees (12%) (Table I), and did not show statistical differences when comparing the two groups ($p>0.05$).

Table I - Distribution of the participant children according to postural evaluation in the anterior, lateral and posterior views. Fortaleza, CE, 2012.

Postural Evaluation	Group A comics		Group B puppet theatre		*p*
	n	%	n	%	
Anterior					
Head position					
Centered	22	84	22	84	0.27
Lateralized to the R	2	8	2	8	
Lateralized to the L	2	8	2	8	
Shoulders					
Symmetrical	18	69	23	88	
Higher R	1	4	0	0	0.35
Higher L	7	27	3	12	
Iliac crest					
Symmetrical	23	88	25	96	
Higher R	2	8	0	0	0.92
Higher L	1	4	1	4	
Knees					
Normal	25	96	22	84	
Genu valgum	1	4	2	8	0.91
Genu varum	0	0	2	8	
Lateral					
Cervical column					
Normal	25	96	26	100	
Hyperlordosis	0	0	0	0	0.79
Straightened	1	4	0	0	
Hyperkyphosis	0	0	0	0	
Dorsal column					
Normal	26	100	26	100	
Hyperkyphosis	0	0	0	0	0.74
Streightened	0	0	0	0	
Anterior flexion					
Without gibbosity	26	100	24	92	
Gibbosity to the R	0	0	1	4	1
Gibbosity to the L	0	0	1	4	
Posterior					
Scapula prominence					
Symmetrical	24	92	25	96	
R side	0	0	0	0	0.92
L side	2	8	1	4	
Thales triangle					
Symmetrical	23	88	23	88	
Larger to the R	2	8	1	4	0.28
Larger to the L	1	4	2	8	

R=right; L=left.

Table II - Distribution of participant children as to the correct postural habits. Fortaleza, CE, 2012.

Postural Habits	Correct Position	Group A comics (%)	Group B puppet theatre (%)	*p*
Seated				
	Back	54	42	0.33
	Butt	84	58	0.78
	Feet	61	35	0.71
Standing				
	Back	84	65	0.28
	Feet	65	61	0.49
Sitting at the computer		58	50	0.84
Carrying backpack		58	54	0.64
Picking objects from the floor		61	65	0.24
Way of sleeping		61	54	0.03*

*p<0,05.

Table III - Opinion and knowledge of the participant children after the utilization of two forms of health education strategy. Fortaleza, CE, 2012.

Question	Group A comics	Group B puppet theatre	*p*
Did you enjoy the initiative?			
Yes	100% (n=26)	100% (n=26)	-
No	0	0	
Did you understand the images?			
Yes	77% (n=20)	88% (n=23)	
No	4% (n=1)	0	0.20
Some	19% (n=5)	12% (n=3)	
What did you not understand?			
How to sit	0	4% (n=1)	
How to walk correctly	12% (n=3)	0	0.04*
How to carry the backpack	4% (n=1)	0	
Did you understand the language?			
Yes	77% (n=20)	88% (n=23)	
No	4% (n=1)	4% (n=1)	0.66
A bit	19% (n=5)	8% (n=2)	
What changed in your behaviour?			
Learned how to sit and walk correctly	58% (n=15)	50% (n=13)	
Reduced the backpack weight	12% (n=3)	8% (n=2)	
Started kneeling to raise objects	12% (n=3)	12% (n=3)	0.54
Nothing changed	18% (n=5)	30% (n=8)	

*p<0.05

With regard to postural habits, Table II shows the percentage of correct responses to the questionnaire on the 6 categories of surveyed positions. The largest percentage differences were presented in Group B, as for the correct sitting postures touching the 'butt' in the chair (26%) and feet on the ground (26%), and standing with your back straight (19%) .

After two months, the children were reassessed on the effectiveness of learning strategies. The groups evidenced a similarity when all (100%) children said they liked the initiative. In Group A, only 23% (n=6) had some difficulty in understanding the images and 58% (n=15) improved the way of walking and sitting. In Group B, 12% (n=3) had some difficulty in understanding the language and 50% (n=13) improved the way of walking and sitting (Table III). The largest percentage differences between the groups were in the understanding of teaching strategy (11%), being reported greater ease of understanding by the children of Group B, though 30% said they had not changed their behaviour after being provided with information, not showing statistical difference when comparing the two groups ($p>0.05$).

DISCUSSION

The two teaching strategies used in this study proved to be effective for teaching and retaining concepts on the correct postural habits.

These data are in line with other studies that highlight the importance of proper posture in childhood or the early correction of postural deviations in that stage, in order to enable correct postural patterns in adult life, as that period is the most important for the individual's musculoskeletal development and thus more prone to prevention and treatment of postural changes[3,11,12].

Therefore, if all posture patterns assumed in childhood form a pattern and become unconscious, it is in childhood that we should promote the correction of these possible bad postural habits and the postural habits education in activities of daily life, so that, in the future, the adult individuals are free from suffering due to vertebral column problems or, at least, have them reduced. The children surveyed had an average age of about 7 years and did not show relevant postural deviations. Otherwise, other studies with adolescents (14-17 years) have already mentioned an increase in postural health problems, thus age being a factor directly related to the beginning of the modifications[12,13]. It is also important to observe the association between posture, occlusion and orthoptics, since this causal connection is often unnoticed, hence the importance of a multidisciplinary approach[11].

Postural evaluation of children can contribute further more to the society we live in, avoiding alterations in the vertebral column, improving student achievement and promoting their physical and emotional well-being[14].

One study found the incidence of postural deviations in 154 schoolchildren from the city of Novo Hamburgo, RS, aged 6-17 years. The results showed that, in relation to the vertebral column, only 29.22% of the evaluated girls presented it without any deviation, while 70.78% had some postural change. Most observed deviations were: increased curvature in cervical column, and protrusion of shoulders[15].

Another study[12] evaluated 1,340 students with average age of 12.7 years and found that the prevalence of scoliosis was 1.4%; shoulder and scapula asymmetry, 6.6%; forearm and trunk asymmetry, 4.0%; vertebral column misalignment, 1.9%; and Thales triangle asymmetry, 6.4%. Thus, there is a disagreement as to the percentage of postural changes. In this study, the children had a higher percentage difference between groups only on symmetry at the shoulders (19%), higher left shoulder (15%) and normal knees (12%), demonstrating, at least partially, homogeneity in postural evaluation between the 2 groups.

A proper postural alignment depends on several factors. Thus, work on postural re-education area requires a multiprofessional and multidisciplinary approach to obtain the desired success. Parents, classroom teachers, school principals, physical education teachers, doctors, physiotherapists, psychologists, among others, all have the responsibility to observe and properly orient children and adolescents in relation to their daily postural attitudes, in order to render the development more harmonious and promote changes in the school environment[4,7,11].

After the application of health education strategies, we found that both the children in Group A, as those in Group B, have learned about correct postural habits with the proposed methodologies, which advocated the use of creativity and playfulness in their approach, therefore enabling the dissemination of knowledge through new teaching-learning methodologies[7,13,16-18]. Although a few children have not understood about the correct postural habits, it is noteworthy that children of Group B were the ones that had greater ease of learning. This can be explained by the fact that the theatre arises greater public attention.

Theatre can be an important tool for the students' education, to the extent that, properly used, it assists in the overall development of children and adolescents, promotes socialization and improves learning of school subjects. It also stands out that the theater also disturbs in a philosophical sense, because it stimulates thought and modification of established reality [19].

Learning may have been benefited by the fact that the children are of school age, between 5 and 10 years, this corresponding to the concrete operational period, or "age of reason". During this stage, they manifest the ability to move from premises to conclusions. As a consequence of concrete operations, the children gradually begin to understand, among other things, the clock, the calendar, the historical time and the distinction between physical and psychological causality [17].

However, due importance is still not given to this growth stage and its long-term repercussions. An interesting study[18], conducted with school teachers, addressed the following question: "Do you think teachers in your school are able to be part of this monitoring outlined for prevention, early diagnosis and recovery of health problems?". In response, 63.3% said no; therefore, the authors suggest further training of teachers, in order to meet the guidelines of the School Health Program (PSE).

It is understood as essential to start early in childhood a proper postural orientation, warning about the danger associated to bad postures while performing activities of daily living, and demonstrating the correct postures to be used in everyday life[20].

The children evidenced the degree of acceptance of the two strategies used in this study, as they reported enjoying the initiative and highlighted the modifications they had adopted in their postural habits, especially regarding the way of walking and sitting. Corroborating this finding, another study of school children in the city of Garibaldi, RS was well accepted by children, and also found that the act of catching properly an object from the ground was well established by the students, as well as the side sleeping position, this achievement being attributed to the fact that practical demonstrations of these positions were performed[21].

Physical therapy is still poorly comprised in the school environment, what demands more attention, especially in relation to preventive aspects and health promotion[3,11,21,22].

The study had some limitations the evaluation of a single school and the small sample size. Notwithstanding, the main goal was achieved, since the children showed good acceptance and assimilation of knowledge. More detailed future studies, with a follow-up to adulthood, are needed to confirm the effectiveness of teaching strategies as ways of prevention of postural deviations.

CONCLUSION

The findings of this study revealed that the two forms of health education - comics and puppet theater - proved to be effective for teaching and retaining concepts on the correct postural habits, not being detected high differences in learning and memorization of postural habits, when comparing the two groups.

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