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Effect of an educational intervention on the clinical competence for primary healthcare of rheumatic diseases in Mexican physicians

Efecto de una intervención educativa en médicos mexicanos sobre la competencia clínica para la atención primaria de enfermedades reumáticas

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ABSTRACT

Objetive To measure the effect of an educational intervention on clinical competences for diagnosis and treatment of rheumatic diseases in primary healthcare physicians working in the Guadalajara Metropolitan Area, Jalisco, Mexico.
Methodology Quasi-experimental study conducted in physicians from two primary health care units. The study was carried out in a 40 physicians sample, 21 in Group "A" (intervention) and 19 in Group "B" (control). The clinical competence for diagnosis and treatment of rheumatic diseases was measured in both groups by means of an instrument previously designed and validated (Kuder-Richardson reliability index =0,94).
Results Clinical competence average score prior to intervention was 47 for Group "A" and 42 for Group "B", while after the intervention it was 72 and 47 respectively, which shows statistically significant differences (Wilcoxon test, $p<0,05$).
Conclusions Clinical competence for diagnosis and treatment of rheumatic diseases in primary healthcare physicians is low; however, it can be improved by implementing educational interventions based on a constructivist approach.

Key Words: Rheumatic diseases, clinical competence, primary health care, intervention study (*source: MeSH, NLM*).

RESUMEN

Objetivo Medir el efecto de una intervención educativa sobre la competencia clínica para el diagnóstico y tratamiento de enfermedades reumáticas en médicos de

atención primaria de la Zona Metropolitana de Guadalajara, Jalisco, México.
Metodología Estudio cuasi-experimental realizado en médicos de dos unidades de atención primaria a la salud. Se estudió una muestra propositiva de 40 médicos, 21 en el grupo "A" (intervención) y 19 en el grupo "B" (control). Se evaluó la competencia clínica para el diagnóstico y tratamiento de enfermedades reumáticas en ambos grupos mediante un instrumento previamente diseñado y validado (índice de fiabilidad de Kuder-Richardson =0,94).
Resultados El puntaje medio de competencia clínica previo a la intervención fue 47 en el grupo "A" y 42 en el grupo "B", y después de la intervención fue 72 y 47, respectivamente, con diferencias estadísticamente significativas (prueba de Wilcoxon, $p<0,05$).
Conclusiones La competencia clínica para el diagnóstico y tratamiento de enfermedades reumáticas en médicos de atención primaria es baja; sin embargo, puede mejorarse mediante intervenciones educativas con enfoque constructivista.

Palabras Clave: Enfermedades reumáticas, competencia clínica, atención primaria de salud, estudios de intervención (*fuente: DeCS, BIREME*).

In Mexico, a high prevalence of rheumatic diseases has been reported (1). In addition, these diseases are a major cause of phenomena such as disability, work limitations and increases in health expenditure (2,3). Regarding primary care, musculoskeletal symptoms and specific rheumatic diseases represent 9 to 20 % of medical consultation (4-6). However, patients suffering these diseases usually do not receive medical care by rheumatologists due to the shortage of the latter (7). Therefore, primary care physicians should provide these patients with high quality health care, which is why their clinical competence in terms of diagnosis and treatment of rheumatic diseases should be questioned.

Physicians' clinical competence can be defined as the ability to evaluate and solve clinical problems by using reasoning and clinical judgment (8). Some studies have revealed that primary care physicians in Latin America admit their clinical competence for diagnosis and treatment of rheumatic diseases is limited (9). Similarly, other studies have reported that the level of clinical competence in primary care medical units of the Mexican Social Security System is suboptimal in 84.7 % (10) and 89 % (11) of physicians working in the Guadalajara Metropolitan Area, in the state of Jalisco, Mexico. Accordingly, this study is conducted in order to measure the effect of an educational intervention on the clinical competence for diagnosis and treatment of rheumatic diseases in primary healthcare physicians working in the Guadalajara Metropolitan Area, Jalisco, Mexico.

METHODOLOGY

A quasi-experimental study was performed in physicians working in primary care medical units of the Mexican Social Security Institute in the Guadalajara Metropolitan Area, State of Jalisco, between September 2010 and February 2013. The study group consisted of 40 physicians working in two medical units, 21 belonged to unit "A", while 19 belonged to unit "B". Both primary care units were chosen based on the number of patients with rheumatic diseases annually attended and the equipment available in their premises (laboratory and X-rays), ensuring that these aspects were similar in both units so that experience and diagnosis resources among physicians were equivalent, and taking into account any differences as potential confounding variables.

A purposive sample made up of all the physicians who agreed to participate in this research was studied. Intervention and control groups were formed by physicians attached to medical units "A" and "B", respectively, while their designation was randomly made.

Clinical competence for diagnosis and treatment of rheumatic diseases in all participants was measured, while descriptive variables such as age, sex, specialty, type of contract and years of medical practice were included. These features were compared between both groups in order to determine their similarity. Afterwards, an educational intervention was performed in group "A".

Clinical competence for diagnosis and treatment of rheumatic diseases was defined as the knowledge and skills that allow medical doctors to face varying complexity and problematic clinical cases in order to reach a proper diagnosis and decide the best therapeutic option (12). This variable was measured through a previously designed and validated instrument consisting of 110 questions assessing four domain areas (10,11), namely, "risk factors", "clinical data", "diagnosis" and "treatment", in the five most common rheumatic diseases (10,11): "rheumatoid arthritis", "Sjögren's syndrome", "gout", "osteoarthritis" and "systemic lupus erythematosus".

Three possible answers were given for each of the 110 questions: "true", "false" and "do not know". A correct answer had a value of +1 point, an incorrect answer, -1 point, while "do not know", 0 points (10,11). Based on the questionnaire results obtained from this score, six levels of overall knowledge were established (10,11): 1. "Obtained by chance" <20 points; 2. "Very low", 21-38 points; 3. "Low", 39-56 points; 4. "Regular", 57-74 points; 5. "High"

75-92 points and 6. "Very high", 93-110 points. A reliability of 0.94 according to the Kuder-Richardson Formula 20 was reported for this instrument (10.11).

The educational intervention conducted in group "A" was based on a participatory approach through strategies such as dialogue, ideas exchange and idea-sharing of actions regarding diagnosis and treatment of patients. The intervention lasted six months, with an intensity of five hours per week: two weekly sessions of two hours in the classroom and 1.5 hours in the consultation room. The following activities were carried out in the classroom: theoretical presentations by the teacher (40 minutes), small group discussion (30 minutes), discussion (30 minutes), and review of clinical cases by the whole group based on literature reviews (20 minutes).

Meanwhile, activities in the consultation room consisted of providing medical consultations to patients by teachers and education specialists, and providing care for patients with rheumatic diseases in the presence of physicians so that they were able to make observations and receive feedback.

Information collected in this study was systematized in SPSS© 10.0 version for Windows © environment. All variables were analyzed by using descriptive statistics, frequency distributions and measures of central tendency and measures of dispersion. Student's t, Z and Wilcoxon tests were used to compare both groups through parametric quantitative, parametric qualitative and nonparametric variables, respectively, where ≤0,05 p values were considered to be significant.

According to Mexico's laws, this research was considered to be "safe" for its participants (13), so obtaining informed consent from them was not required.

RESULTS

In total, 40 doctors were included, 21 from medical unit "A" (group "A" or testing group) and 19 from medical unit "B" (group "B" or control group). Table 1 shows participants' sociodemographic characteristics. In this table is possible to note that no significant differences between the both groups were found (p>0,05).

On the other hand, Table 2 shows the domain area and the overall clinical competence medians in both groups, where significant differences, prior to and

after the intervention, were observed in group "A" when compared to group "B" in both scenarios: overall and domain area clinical competence (p<0,05).

Table 1. Sociodemographic characteristics of physicians participating in the study

Variables	Group "A" (n=21)	Group "B" (n=19)	ρ Value*
Age (years)**	41 ± 7	43 ± 7	0,84
Sex			
Male	12 (57 %)	11 (58 %)	0,96
Female	9 (43 %)	8 (42 %)	
Specialty	18 (86 %)	14 (78 %)	0,74
Type of contract			
Indefinite	16 (76 %)	15 (79 %)	0,52
Temporary	5 (24 %)	4 (21 %)	
Years of medical practice **	12 ± 7	14 ± 7	0,32

*According to Student's t-test for quantitative variables and Z test for qualitative variables. **Median and standard deviation. Source: Own elaboration based on the data obtained in the study

Finally, Table 3 presents the level of clinical competence of both groups, where prior and after intervention statistically significant differences at "Obtained by chance", "Very low", "Regular" and "High" levels were observed in group "A", while there were not significant differences at any level in group "B".

Table 2. Medians and Intervals of scores obtained by physicians prior to and after the intervention

Indicator or domain	Group "A" (Intervention)			Group "B" (Control)		
	Prior	After	ρ*	Prior	After	ρ*
Risk factors	16 (14-32)	29 (21-26)	<0,05	17 (9-23)	19 (24-32)	>0,05
Clinical data	26 (17-42)	35 (23-41)	<0,05	23 (16-39)	25 (16-40)	>0,05
Diagnosis	14 (25-21)	22 (13-26)	<0,05	13 (13-23)	12 (14-23)	>0,05
Treatment	11 (7-18)	15 (12-21)	<0,05	12 (7-17)	14 (7-16)	>0,05
Overall competence	47 (24-74)	72 (37-96)	<0,05	42 (19-72)	47 (28-59)	>0,05

*According to Wilcoxon test. Source: Own elaboration based on the data obtained in the study

Table 3. Physicians' level of clinical competence prior to and after intervention

Competence level	Group "A" (Intervention)			Group "B" (Control)		
	Prior	After	ρ*	Prior	After	ρ*
Obtained by chance	3 (15 %)	0 (0 %)	<0,05	3 (15.8%)	0 (0 %)	>0,05
Very low	7 (33 %)	1 (5 %)	<0,05	6 (31 %)	4 (21,6 %)	>0,05
Low	6 (30 %)	6 (30 %)	>0,05	4 (21 %)	9 (47,4 %)	>0,05
Regular	5 (25 %)	11 (55 %)	<0,05	6 (31,6 %)	6 (31,6 %)	>0,05
High	0 (0 %)	3 (15 %)	<0,05	0 (0 %)	0 (0 %)	>0,05
Very high	0 (0 %)	0 (0 %)	>0,05	0 (0 %)	0 (0 %)	>0,05

*According to Z test. Source: Own elaboration based on the data obtained in the study

DISCUSSION

Up to 2013, year in which this research was conducted, this study has been the first one addressing the improvement of clinical competencies for diagnosis and treatment of rheumatic diseases in primary care physicians from Guadalajara and Mexico. Previous research has shown that Mexican and Latin American physicians' clinical competence for diagnosis and treatment of this group of rheumatic diseases is suboptimal (9-11), which is consistent with the results reported in this study. This is of great importance for local and domestic public health, since in Mexico rheumatic diseases are the fourth leading cause of temporary and permanent inability to work in salaried employees (14), which in turn affects local and national economy by limiting the economical active workforce, thus interventions like the one reported here are very useful in this field.

Educational interventions have proved useful in improving clinical skills of medical doctors regarding diagnosis and treatment of several diseases (15-18). All reports agree that subjects under training should be encouraged to participate in the knowledge creation process through active and targeted search of such knowledge, which is the principle of the teaching and learning constructivist model (19,20). In this regard, some advantages in different clinical competence levels were observed in the testing group, including the reduction of participants classified in "low" level and the increase of subjects in "high" level. However, it is necessary to admit that the quasi-experimental design of this study is limited by the non-random selection of the participants and the unbiased statistical analysis of the data collected.

According to the literature reviewed (15-18) and the results obtained in this study, it is suggested to replicate this teaching and learning model in the medical continuing education strategies implemented in the Mexican Social Security Institute and other institutions of the National Health System. In addition, it is advisable to measure the level of clinical competence of primary care physicians regarding diagnosis and treatment of other diseases of importance to local and national public health contexts in different regions of the country.

This study allows concluding that educational strategies aimed at improving physicians' clinical practices, where theoretical and participatory schemes are combined, help them to develop competences related to clinical skills at different levels *

Conflicts of interest: None.

Authors' contributions: CECP and SARG conceived and designed the study. CECP provided study materials. SARG collected and systematized the data. CECP and MAZG analyzed and interpreted the data. MAZG wrote the paper. MAZG made amendments and was the corresponding author in the editorial process. All authors revised and approved the preliminary and final versions of the paper.

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REFERENCES

1. Cardiel MH, Rojas-Serrano J. Community based study to estimate prevalence, burden of illness and help seeking behaviour in rheumatic diseases in Mexico City. A COPCORD study. Clin Exp Rheumatol. 2002;20(5):617-24.
2. Zamora L, Arellano M, Kuntsmann S, Montenegro A, Riveros B, Schlegel I, *et al.* Invalidez en sistema privado de pensiones en Chile. Rev Med Chile. 1997;125:99-106.
3. Badley E, Rasooly I, Webster G. Relative importance of musculoskeletal disorders as a cause of chronic health problems, disability and health care utilization: findings from the 1990 Ontario Health Survey. J Rheumatol.. 1994; 21(3):505-14.
4. Rosemblatt R, Cherkin D, Schneeweis R, Hart LG, Greenwald H, Kirkwood CR, *et al.* The structure and content of family practice: Current status and future trends. J Fam Pract. 1982;15(4):681-722.
5. Felts W, Yelin E. The economic impact of the rheumatic diseases in the United States. J Rheumatol. 1989;16(7):867-84.
6. Pacheco D, Vizcarra G, Castillo V, Fuentealba C, Alvarez M, Ballesteros F. Perfil de la consulta reumatológica. Comparación entre un policlínico de atención primaria vs uno de reumatología. Rev Chilena Reumatol. 1997;13:101.
7. Bjelle A. Primary care and rheumatology in musculoskeletal disorders: bridging the gap. J Rheumatol. 1996;23(2):205-7.
8. Pantoja-Palmeros M, Barrera-Monita J, Insfrán-Sánchez M. Instrumento para evaluar la aptitud clínica en anestesiología. Rev Med IMSS. 2003;41(1):15-22.
9. Pacheco RD, Gatica RH, Kaliski KS. Autoevaluación de fortalezas, debilidades y confianza de los médicos de atención primaria en el abordaje de enfermedades reumatológicas. Rev Med Chil. 2006;134(7):813-20.
10. Cabrera-Pivaral CE, Alonso-Reynoso C, Vázquez-Villegas ML, Salazar-Páramo M, González-Pérez GJ, Vega-López MG, *et al*. Evaluación de la competencia para el tratamiento de la artritis reumatoide por médicos de primer contacto. Rev Alerg Mex. 2011;58(4):185-91.
11. Cabrera-Pivaral CE, Gutiérrez-González TY, Gámez-Nava JI, Nava A, Villa-Manzano AI, Luce-González E. Clinical competence for autoinmune and non-autoinmune rheumatic disorders in primary care. Rev Alerg Mex. 2009;56(1):18-22.
12. Wimmers P, Splinter TAW, Hancock G, Schmidt H. Clinical competence: general ability or case-specific? Adv Health Sci Educ Theory Pract. 2007;12(3):299-314.
13. Presidencia de la República de los Estados Unidos Mexicanos. Reglamento de la ley general de salud en materia de investigación para la salud. México D.F.: Diario Oficial de la Federación; 1986.

14. Secretaría del Trabajo y Previsión Social. Información sobre accidentes y enfermedades de trabajo. Jalisco 2004-2013. México D.F.: Secretaría del Trabajo y Previsión Social; 2014
15. Cortés-Sanabria L, Cabrera-Pivaral CE, Cueto-Manzano AM, Rojas-Campos E, Barragán G, Hernández-Anaya M, *et al*. Improving care of patients with diabetes and CKD: a pilot study for a cluster-randomized trial. Am J Kidney Dis. 2008; 51(5):777-88. http://doi.org/b99d2p.
16. Dalfó-Baqué A, Camps-Vilà L. ¿Puede una intervención educacional en los médicos de familia mejorar su competencia clínica para preservar la función renal de los pacientes con diabetes mellitus tipo 2 y enfermedad renal crónica? Formación Médica Continuada en Atención Primaria. 2009; 16(7):468. http://doi.org/cg8gtf.
17. Cabrera-Pivaral CE, Hobert-Cepeda BG, Berdugo-Rodríguez AL. Effect of an educative intervention on the clinical ability of physicians in the risk factor identification of metabolic syndrome. Health. 2011;3(10):626-30. http://doi.org/ctg834.
18. Cabrera-Pivaral CE, Anaya-Prado R, González-Pérez G, Vega-López MG, Centeno-López NM. Effect of an educative intervention on the clinical ability of physicians in the management of metabolic syndrome. Rev Invest Clin. 2012;64(1):74-80.
19. Viniegra L. La investigación como herramienta de aprendizaje. Rev Invest Clin. 1988;40:191-7.
20. Baig L, Violato C, Crutcher R. Construct validity study of clinical competence: a multitrait multimethod matrix approach. J Contin Educ Health Prof. 2010;30(1):19-25. http://doi.org/dcmzz9.