

Continuing Medical Education for Community and Hospital Physicians in Israel

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Abstract

Background: In this study we aimed to evaluate Continuing Medical Education (CME) activities of primary care physicians.

Methods: An e-mail questionnaire, based on the Jefferson Scale of Physician Life Long Learning (JSPLL), was sent to hospital- and community-based physicians in the Negev District.

Results: Eighty eight hospital-based physicians (38% response rate) and 118 community-based physicians (31% response) participated in the study. Hospital physicians participated more in annual meetings of professional medical associations ($P < 0.0001$). They also gave more talks at professional meetings and took part more in research studies ($P < 0.0001$). The variables that predicted the upper tertile of the most updated physicians were age (OR=0.947; 95% CI 0.926-0.968), male gender (OR=2.502; 95% CI 1.019-4.268), and active participation in teaching (OR=4.013; 95% CI 1.347-11.954).

Conclusion: Both hospital and community physicians have a high level of access to medical journals and the Internet, but CME activities have been adapted more by hospital physicians.

Keywords: Continuing medical education; Community and hospital based education; Life- long medical education

Introduction

Receiving a medical degree (MD) is only the beginning of a lifelong learning process. Medical schools provide basic medical knowledge and skills. Formal learning generally continues in residency programs, which may be followed by sub-specialization and fellowship programs that hone skills needed to perform more specific tasks. However, at some point “formal” structured education ends and physicians are left to face the challenge of updating their knowledge and skills alone in a world of changing and rapidly growing knowledge. With a professional span of activities that may last for several decades after graduation, and this rapidly growing well of knowledge, lifelong education becomes a must.

Various terms have been used to define lifelong learning such as self-directed learning, self-educative approach, self-initiative learning, active learning, independent learning, contextual learning, continuing education and distance learning [1]. According to some researchers the key features of lifelong learning include personal motivation, a recognition of needs that prompts an active search for knowledge, and information-seeking skills [2,3]. Candy [4] indicated that lifelong learning education provides physicians with the competences and skills required to continue their self-education beyond the completion of their formal training.

It should be noted that in Israel there is no legal requirement for physicians to undergo CME or recertification exams. Moreover, the Ministry of Health in Israel has not allocated any specific resources for long-term updating activities for physicians.

In this study we aimed to evaluate CME activities of primary care physicians and hospital-based physicians working in the same geographic region. We evaluated the rate of physicians who participated in any type of CME activity during the past five years; the different CME methods used by the physicians, and the characteristics of physicians who attend CME activities compared to those who do not.

To the best of our knowledge there are no previous studies comparing CME activities between these two groups of physicians.

Methods

Setting

Clalit Health Services (CHS), the largest HMO in Israel, provides health insurance to 55% of the population. CHS is organized into eight geographic districts. In the southern district it covers 60% of the population.

The Soroka University Medical Center (SUMC) is a tertiary care center that provides healthcare services to the whole Negev population.

Study population

All Primary care physician (PCPs) working in the community, approximately 380, were invited to participate in the study, as were all the senior physicians working at the SUMC, approximately 230 in number. PCPs who were included in the study included general practitioners, board certified in family medicine, pediatric, and internal medicine working in Clalit Health Services Southern District (CHS-SD) community clinics.

Inclusion criteria

The inclusion criteria included:

- Physicians who have been in community practice for more than two years.
- Physicians who work in any primary care setting for at least 15 hours/week.
- Senior physicians who have worked at the SUMC for at least 15 hours/week for more than two years.

Study tools

The Jefferson Scale of Physician Lifelong Learning (JSPLL) (Appendix 1) was translated into Hebrew using the back translation method and validated in Hebrew [5,6]. It includes 19 questions that are divided into four subscales that reflect basic elements that are known to be consistent with lifelong learning. These include professional learning beliefs and motivation, scholarly activities, attention to learning opportunities, and technical skills in seeking information. The validity of the scale and its subscales was supported by significant correlations with a set of criterion measures that presumably require continuous learning. The internal consistency reliability (coefficient α) was 0.89, and the test-retest reliability is 0.91.

- A questionnaire that includes socio-demographic variables such as age and gender, and profession-related questions such as number of years in practice, country of medical graduation, specialization, etc.
- For primary care physicians- practice variables including city, size of practice, solo or group practice, and number of visits per day.
- Hospital-physician workload variables including number of shifts per month, number of on-call tours per month, etc.

Study protocol

A list of all PCPs and senior hospital based physicians was obtained from central computerized databases of CHS-SD and SUMC. Physicians who do not meet the inclusion criteria were excluded.

The structured questionnaire was sent to all eligible physicians by email. A computerized tracking system was established to ensure delivery of the questionnaires, to encourage compliance, to provide reminders and, if required, to resent the questionnaires by fax or regular mail.

The research was conducted in accord with prevailing ethical principles and reviewed by an Institutional Review Board. The research was exempted by the Soroka Medical Center Helsinki Committee from getting the committee's approval. The research was approved by the Clalit Health Services' Meir Medical Center Helsinki Committee (Approval #6024-08[k]) and all procedures followed were in accordance with the ethical standards of the IRB and the Helsinki Declaration of 1975, as revised in 2000. The committee exempted us from informed consent forms.

Results

Demographic and profession-related characteristics of the study population

Eighty eight hospital-based physicians (38% response rate) and 118 community-based physicians (31% response) participated in the study. Among community-based physicians no statistical significant differences were found between physicians who participated in the study and physician who did not participate in the study regarding gender and years of employment at CHS. Physicians who participated in the study were younger (47.8 ± 7.3 vs. 50.5 ± 8.4 , $p=0.002$). We have no analog data for the hospital-based physicians.

The demographic characteristics of the study population are shown in (Table 1). The mean age of the hospital physicians was higher than the community-based physicians (52.4 ± 8.3 vs. 50.03 ± 7.2 ; $P=0.036$). Only 23.3% of the hospital physicians were women compared with 50% among community physicians ($P<0.0001$). More than half of the hospital physicians were Israeli-born (51.2%) compared with 26.1% of the community physicians ($P<0.0001$). The distribution of specializations among the hospital physicians was internists 21.6%, pediatricians 19.3%, surgeons 9.1%, and OB/GYN 4.5%.

Among community physicians 62.7% were family physicians, 22.9% were pediatricians, 5.9% were internists, 4.2% were geriatricians, and 3.4% were general practitioners. The main place of work was an urban clinic for 65% of the community physicians and a rural clinic for 14.5%; 27.4% were clinic directors. The hospital physicians were more involved in teaching (94.1% vs. 59.3% , $P<0.0001$), had more academic positions (96.6% vs. 59.5% , $P<0.0001$), and were more involved in the planning and development of educational programs (72.4% vs. 27.8% , $P<0.0001$).

Variable		P-SUMC (N=88)	PCP-CHS (N=118)	P
Age	Mean \pm SD	52.4 \pm 8.3	50.03 \pm 7.2	0.036
	Range	36-68	35-67	
	total	83 (mis=5)	113 (mis=5)	
Gender [N (%)]	Male	66 (76.7)	58 (50.0)	<0.0001
	Female	20 (23.3)	58 (50)	
	total	86 (mis=2)	116 (mis=2)	

Country of birth [N (%)]	Israel	43 (51.2)	30 (26.1)	<0.0001
	Former SSR	18 (21.4)	65 (56.5)	
	Other	23 (27.4)	20 (17.4)	
	total	84 (mis=4)	115 (mis=3)	
Years in Israel	Mean ± SD	19.9 ± 8.7	33.1 ± 13.8	<0.0001
	Range	14-61	Aug-52	
	total	41	77 (mis=8)	
Country of medical studies [N (%)]	Israel	57 (68.7)	24 (21.4)	<0.0001
	Former USSR	16 (19.3)	63 (56.3)	
	Other	10 (12.0)	25 (22.3)	
	total	83 (mis=5)	112 (mis=6)	
Seniority as physician (years)	Mean ± SD	25.4 ± 8.9	24.5 ± 8.1	0.375
	Range	Jul-46	Aug-47	
	total	85 (mis=3)	104 (mis=14)	
Country of specialization training [N (%)]	Israel	79 (94.0)	100 (88.5)	0.18
	Other	5 (6.0)	13 (11.5)	
	total	84 (mis=4)	113 (mis=5)	
Seniority as specialist (years)	Mean ± SD	15.0 ± 8.3	12.4 ± 7.8	0.034
	Range	Feb-33	Jan-36	
	total	82 (mis=6)	109 (mis=5)	
Years in community/hospital practice	Mean ± SD	19.6 ± 8.5	14.5 ± 6.8	0.0002
	Range	Jan-38	Feb-33	
	total	85 (mis=3)	110 (mis=8)	
Involved in teaching? [N (%)]	Yes	80 (94.1)	64 (59.3)	<0.0001
	No	5 (5.9)	44 (40.7)	
	total	85 (mis=3)	108 (mis=10)	
Academic position? [N (%)]	Yes	85 (96.6)	66 (59.5)	<0.0001
	No	3 (3.4)	45 (40.5)	
	total	88	111 (mis=7)	
Did you participate in the development of teaching programs?	Yes	63 (72.4)	30 (27.8)	<0.0001
	No	24 (27.6)	78 (72.2)	
	total	85 (mis=3)	108 (mis=10)	
P-SUMC Physician - Soroka University Medical Center; PCP- CHS Primary care physician Clalit Health Services				

Table 1: Comparison of demographic and physician practice characteristics between hospital (P-SUMC) and community (PCP-CHS) physicians.

Comparison between the study groups in terms of reading habits and literature updates

The participants were asked to grade on a scale of 1-5 (1=not at all and 5=a lot), the extent to which they used various update modalities. Family physicians read Hebrew medical literature more ($P<0.0001$), while hospital physicians read more in other languages ($P<0.0001$). Community physicians participated more in CME activities, while hospital physicians attended medical conferences and clinical meetings in the hospital more than community physicians ($P<0.0001$). Hospital

physicians read medical journals more to keep up to date ($P<0.0001$), while community physicians preferred to keep up to date by reading bulletins published by their HMO administration ($P<0.0001$). No statistical significant differences were found between study groups in reading update modality of: drug company publications, membership/non-membership websites and self-learning CD. No statistical significant differences were found between study groups in participation in CME mini-courses and Drug Company sponsored meeting (Table 2).

Variable	P-SUMC (N=88)			PCP-CHS (N=118)			P
	Mean \pm SD	Median	Missing	Mean \pm SD	Median	Missing	
Reading update modality							
Professional textbooks	3.63 \pm 0.96	4	0	3.40 \pm 0.81	3	6	0.077
Hebrew journals	2.70 \pm 1.11	3	1	3.38 \pm 0.9	3	5	<0.0001
Foreign language journals	4.38 \pm 0.92	5	24	3.75 \pm 0.84	4	5	<0.0001
Israel Medical Association guidelines	2.67 \pm 1.18	3	6	3.12 \pm 1.18	3	12	0.01
To what degree did you participate in the following updates during the past year?							
CME courses (weekly meetings)	2.08 \pm 1.52	1	8	3.08 \pm 1.74	3	9	<0.0001
Scientific conferences	4.33 \pm 0.89	5	4	3.44 \pm 1.30	3	6	<0.0001
Clinical meetings in the clinic	3.53 \pm 1.62	4	20	3.74 \pm 1.34	4	13	0.349
Clinical meetings in the hospital	3.81 \pm 1.27	4	3	2.50 \pm 1.53	2	12	<0.0001
Lectures at the hospital/clinic/university	3.73 \pm 1.21	4	2	3.20 \pm 1.35	3	6	0.004
Work with a specialist consultant	2.25 \pm 1.51	1	37	2.70 \pm 1.80	2	20	0.13
How frequently do you use the following sources of information when confronting a diagnostic or therapeutic problem?							
Books	3.69 \pm 0.97	4	2	3.83 \pm 1.06	4	3	0.339
Journals	4.38 \pm 0.86	5	0	3.44 \pm 1.14	3	5	<0.0001
Computer database	4.62 \pm 0.75	5	1	4.30 \pm 0.92	5	3	0.0008
Clinic colleagues	3.51 \pm 1.18	4	4	3.69 \pm 1.10	4	6	0.284
Specialist consultant	3.77 \pm 1.19	4	4	3.99 \pm 0.94	4	4	0.151
Sales representative of a drug company	1.71 \pm 0.83	2	4	2.15 \pm 1.21	2	5	0.005
Publications from the HMO/hospital administration	2.00 \pm 0.97	2	4	2.75 \pm 1.14	5	7	<0.0001
CME continuing medical education; P-SUMC Physician - Soroka University Medical Center; PCP- CHS Primary care physician Clalit Health Services							

Table 2: Comparison of updating habits between primary care physicians at the Clalit Health Services (PCP-CHS) and hospital physicians at the Soroka University Medical Center (P-SUMC) on a scale from 1=not at all to 5=very much.

The availability of updating modalities

The vast majority of hospital-based physicians (94.3%) and community-based physicians (90.7%) have access to the internet both at home and at work, as well as full access to e-journals, other electronic databases, and books in their area of specialization. There were no statistically significant differences between the study groups in the degree of access to these sources.

However, hospital physicians actually used these sources to a greater degree than community physicians at home and at work. They were more likely to read leading journals such as the New England Journal of Medicine, Lancet, and JAMA (40.9% vs. 28.0%, $P=0.036$) and leading journals in their field of specialization (59.1% vs. 41.5%, $P=0.009$). Similarly, 25.4% of community physicians did not use the medical library at all (located in the hospital) compared to 1.1% of the hospital physicians ($P<0.0001$).

Attitudes towards CME

There were no significant differences between the study groups in terms of attitudes towards CME in terms of either funding by the employer or whether there should be a linkage between CME and licensing exams. Significantly more community physicians thought that CME courses should be held during regular work hours (P=0.005).

The Jefferson Scale of Physician Lifelong Learning (JSPLL)

The mean score on the JSPLL questionnaire was higher among hospital physicians than community physicians (64.9 ± 8.2 vs. 59.7 ± 7.1, p<0.0001). Three lifelong learning (LL) tertiles were identified across both study groups: lower (score 41-58), middle (score 59-66), and upper (score 67-76).

Comparison of demographic characteristics of the lower and upper LL tertiles

The characteristics of physicians in the lower and upper tertiles were compared. The upper third had more males (82.1% vs. 56.9%, p=0.002), more hospital physicians (68.4% vs. 31.8%, p<0.0001), more Israeli born (44.6% vs. 23.4%, p=0.007), more graduates from Israeli medical schools (63.2% vs. 25.8%, p=0.001), greater involvement in teaching (96.5% vs. 58.4%, p<0.0001), a higher rate of academic appointments (96.4% vs. 60.0%, p<0.0001), and greater participation in medical education (83.6% vs. 21.3%, p<0.001).

Among PCP-CHS the upper third were more likely to be a clinic director (61.1% vs. 13.6%, p<0.0001), and had a lower number of patients per day work (32.4 ± 13.8 vs. 43.4 ± 17.8, p=0.027). No statistical significance differences were found between lower and upper tertiles in PCP-CHS specialty (Family medicine or other) (Table 3).

Variable		JSPLL	JSPLL	P
		Bottom tertile (N=66)	Upper tertile (N=57)	
Age	Mean ± SD	51.1 ± 8.4	52.3 ± 8.1	0.39
	Range	38-67	39-68	
Gender [N (%)]	Male	37 (56.9)	46 (82.1)	0.002
	Female	28 (43.1)	10 (17.9)	
Country of birth [N (%)]	Israel	15 (23.4)	25 (44.6)	0.007
	Former USSR	39 (60.9)	17 (30.4)	
	Other	10 (15.6)	14 (25.0)	
Country of medical studies [N (%)]	Israel	16 (25.8)	36 (63.2)	0.001
	Former USSR	36 (58.1)	16 (28.1)	
	Other	10 (16.1)	5 (8.8)	
Seniority as physician (years)	Mean ± SD	25.1 ± 8.5	25.4 ± 8.7	0.567
	Range	Oct-42	Aug-41	
Main place of work [N (%)]	PCP-CHS	45 (68.2)	18 (31.6)	<0.0001
	P-SUMC	21 (31.8)	39 (68.4)	
Seniority as specialist	Mean ± SD	13.5 ± 8.6	14.8 ± 8.4	0.749
	Range	Jan-36	Feb-33	
Years in community/hospital practice [N (%)]	5-Jan	3 (4.8)	2 (3.6)	0.182
	10-Jun	15 (23.8)	10 (17.9)	
	19-Nov	28 (44.4)	18 (32.1)	
	20+	17 (27.0)	26 (46.4)	
Involved in teaching? [N (%)]	Yes	38 (58.1)	55 (96.5)	<0.0001
	No	26 (41.9)	2 (3.5)	
Academic position? [N (%)]	Yes	39 (60.0)	54 (96.4)	<0.0001

	No	26 (40.0)	2 (3.6)	
Did you participate in the development of teaching programs?	Yes	13 (21.3)	46 (83.6)	<0.0001
	No	48 (78.7)	9 (16.4)	
For PCPs				
Location of main place of work	Urban	27 (61.4)	13 (72.2)	0.417
	Other	17 (38.6)	5 (27.8)	
Position in CHS	Clinic director	6 (13.6)	11 (61.1)	<0.0001
	Primary physician/other	38 (86.4)	7 (38.9)	
Specialty	Family Medicine	19 (42.2)	6 (33.3)	0.514
	Other	26 (57.8)	12 (66.7)	
Average number of patients in a work day (7 hour)	Mean ± SD	43.4 ± 17.8	32.4 ± 13.8	0.027
	Range	9-100	Jul-50	
Upper tertile: LL activity score of 67-76. Bottom tertile: LL activity score of 41-58; JSPLL: Jefferson Scale of Physician Life Long Learning; PCP: Primary care physician; CHS: Clalit Health Services				

Table 3: Comparison of demographic and practice characteristics between physicians with high and low Jefferson Scale of Physician Life Long Learning (JSPLL) scores.

Logistic regression model to predict physicians in the upper tertile

A logistic regression model was developed to predict the characteristics of physicians with LL scores in the upper tertile. The variables included in the model were age (OR=0.947, 95% CI 0.926-0.968), male gender (OR=2.502, 95% CI 1.053-5.944), hospital physician (OR=2.172, 1.019-4.628), and involved in teaching (OR=4.013, 95%CI 1.347-11.954). The country in which the physician graduated was not a predictor variable in this model and was deleted from it (Table 4).

In order to identify the reasons for PCP-CHS being less presented in the upper tertile LL scores, a separate logistic regression model that

includes only PCP-CHS data was developed. The PCP-CHS initial logistic regression model included the variables that were found to be statistically significant in the univariate analysis: teaching involvement, country of medical studies, and average number of patients in a work day.

The age and gender variables were also included in the model for that were used for standardization. In the final model the only variable that was statistically significant predictor for being in the upper tertile LL scores was teaching involvement (OR=12.045, CI95% 1.356-107.013). It was also found that the number of patients per day work is a lower predictor (OR=0.959, CI95% 0.914-1.007).

Variable		Odds Ratio	CI 95%	P
Age		0.947	0.926-0.968	<0.0001
Gender	Male	2.502	1.053-5.944	0.038
	Female	1		
Main work place	P-SUMC	2.172	1.019-4.628	0.045
	PCP-CHS	1		
Teaching involvement	Yes	4.013	1.347-11.954	0.013
	No	1		
P-SUMC Physician - Soroka University Medical Center; PCP- CHS Primary care physician Clalit Health Services				

Table 4: Logistic regression model for predicting physicians in the Jefferson Scale of Physician Life Long Learning (JSPLL) upper tertile.

Discussion

Lifelong learning is the development of human potential through an ongoing supportive process which stimulates and empowers individuals to acquire the knowledge, values, skills and understanding they will require throughout their careers with confidence, creativity and enjoyment in all roles, circumstances and environments [7,8].

It is difficult to develop an operational measure to address all of the concepts described in lifelong learning e.g., human potential, ongoing supportive process, stimulating, empowering, knowledge, values, skills, understanding, confidence, creativity and enjoyment. The Jefferson Scale of Physician Lifelong Learning (JSPLL) defined lifelong learning as a concept involving a set of self-initiated activities (behavioral aspect) and information-seeking skills (capabilities) that are activated in individuals with a sustained motivation (predisposition) to learn and the ability to recognize their own learning needs (cognitive aspect) [9]. The JSPLL includes 19 items on a 4-point Likert scale. A factor analysis of the JSPLL yielded four subscales entitled: (a) professional learning beliefs and motivation, (b) scholarly activities, (c) attention to learning opportunities, and (d) technical skill in seeking information. These are consistent with widely recognized features of lifelong learning.

Hospitals have a long tradition of CME and professional updating that are well integrated into the regular work schedule of the various departments. This activity includes staff meetings, radiology meetings, clinic-pathological meetings, and journal clubs. In contrast, community physicians work alone in the clinic or together with a limited number of other physicians in other clinical units, and CME is not an integral part of the work schedule.

Primary care physicians have more frontal hours directly involved in patients care thus regular staff meetings are less often introduced into the regular working schedule.

Our study found that community doctors read medical journals in Hebrew more than hospital physicians. The latter are more likely to read medical journal in other languages. Since more community based physicians graduated abroad in countries where English was not their medical teaching language.

Community physicians were of the opinion that CME should take place during regular work hours. In this respect it should be noted that hospital physicians are exposed to teaching and updates during the course of their regular work schedule, while community physicians are involved in direct treatment of patients in most of their working hours and have little, if any, opportunity for teaching and updates during work hours in the clinic. We found a non-statistically significant trend that the community physicians working load affect negatively their LL. Hospital physicians use physicians during their internship and residents in their daily work, this allows them to find time during the day work for different programs of LL.

In a cross-sectional study from Israel, CME activities were found to be associated negatively with job stress and positively with job satisfaction, among family physicians [10].

Hospital physicians are also more likely than community physicians to participate routinely in meetings of professional associations and are more involved in research.

The tradition of teaching and research is well integrated into the daily work in hospitals, especially university teaching hospitals. This enhances motivation to be updated at all times. In contrast, the

tradition of teaching and research in family medicine has developed only over recent years so it is much less established. As the focus of patient care moves to the community, the focus of CME should follow the same route.

The present study was conducted in the Soroka University Medical Center in the Negev, Israel and the Department of Family Medicine, both affiliated with the Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel. The faculty's medical school was established in 1973 with the vision of orientation to the community. At least in its first years the medical school encouraged its graduates to be active in the community. The curriculum included a 6-week clerkship in family medicine, which was much longer than in other medical schools [11]. In addition, parts of the pediatrics curriculum were conducted in the community. Thus, the differences found in our region may be smaller than expected and do not necessarily reflect the situation in other places in Israel and around the world.

Identifying the characteristics of physicians with a higher lifelong learning orientation does not, in itself, define guidelines to improve the situation. For example, the fact that male physicians have higher CME scores does not explain why women have lower ones. In many countries women take most of the responsibility and burden for raising the children and running the family [12]. This may cause a conflict between family and career among these physicians [13] and may have a negative effect on their interest in or ability to take part in CME activities. Therefore, we should look for ways to facilitate participation in CME activities for women physicians.

A systematic review on the effect of CME shows that didactic techniques (lectures, presentations) and the provision of printed materials had no or a small positive effect, whereas any kind of interactive program has a moderate to high effect [14]. Academic CME methods yielded a moderate to high beneficial effect on patient outcome. These methods include outreach (the professional comes to the physician), opinion leaders, reminders (prompts to the practitioner to provide specific clinical interventions), interactive education, audit/feedback, and clinical practice guidelines. The most commonly used techniques were those found to have the least benefit [14]. Conferences, the most common form of CME delivery, make a small contribution to the improvement of professional practice [15]. However, this outcome measure is not necessarily the only one of importance. It is reasonable to think that the simple fact that a physician decides to become a lifelong learner (whatever the method chosen) may itself be an important outcome.

Davis et al. [16] suggested that leaders in medical education and related fields work to identify high-priority research topics in CME research. These would cover the board scope of CME and generate scientifically rigorous research into the process and effectiveness of CME. Thus, good research on CME may actually provide a way to promote this important field. The results of relevant research might help policymakers define ways to help physicians engage in CME activities, thus maintaining or even improving their knowledge, skills and attitudes despite the amount of time that has passed since their graduation from medical school.

Conclusion

In conclusion both hospital and community physicians have a high level of access to medical journals and the Internet, but CME activities have been adapted more by hospital physicians. Policymakers should

develop a strategy to enhance accessibility and interest in CME activities. We found that teaching involvement was a major predictor for LL scores in the upper tertile. Community-based physicians should be encouraged to take part in teaching activities, which are associated with a higher level of CME.

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References

1. Mifflin BM, Campbell CB, Price DA (1999) A lesson from the introduction of a problem-based, graduate entry course: The effects of different views of self-direction. *Med Educ* 33: 801-807.
2. Bligh J (1993) The S-SDLRS: A short questionnaire about self-directed learning. *Postgrad Educ General Pract* 4: 121-125.
3. Knowles M (1975) *Self-directed learning: A guide for learners and teachers*. Associated Press, New York.
4. Candy PC (1991) *Self-direction for life-long learning: A comprehensive guide to theory and practice*. Jossey-Bass, San Francisco.
5. Sperber AD, DeVellis RF, Boehlecke B (1994) Cross-cultural translation: Methodology and validation. *J Cross-Cult Psychol* 25: 501-524.
6. Sperber AD (2004) Translation and validation of study instruments for cross-cultural research. *Gastroenterology* 126: S124-128.
7. Aspin D, Chapman J, Hatton M, Sawano Y (2001) *International handbook of lifelong learning part one (and) part two*. Kluwer International Handbooks of Education.
8. Longworth N, Davies WK (1996) *Lifelong learning: New visions, new implications, new roles for industry, government, education, and the community in the 21st century*. Kogan Page, London.
9. Hojat M, Nasca TJ, Erdmann JB, Frisby AJ, Veloski JJ, et al. (2003) An operational measure of physician lifelong learning: Its development, components and preliminary psychometric data. *Med Teach* 25: 433-437.
10. Kushnir T, Cohen AH, Kitai E (2000) Continuing medical education and primary physicians' job stress, burnout and dissatisfaction. *Med Educ* 34: 430-436.
11. Peleg R, Biderman A, Polaceck Y, Tandeter H, Scvartzman P (2005) The family medicine clerkship over the past 10 years at Ben Gurion University of the Negev. *Teach Learn Med* 17: 258-261.
12. Long TR, Elliott BA, Warner ME, Brown MJ, Rose SH (2011) Resident and program director gender distribution by specialty. *J women's health* 20: 1867-1870.
13. Barilan A, Haimov T, Doplek K, Matnick S, Vinker S, et al. (2011) Workload, burnout and need to recover among female residents in internal medicine and family medicine. *Harefuah* 150: 625-690.
14. Bloom BS (2005) Effects of continuing medical education on improving physician clinical care and patient health: A review of systematic reviews. *Int J Technol Assess Health Care* 21: 380-385.
15. Davis DA, Thomson MA, Oxman AD, Haynes RB (1995) Changing physician performance. A systematic review of the effect of continuing medical education strategies. *JAMA* 274: 700-705.
16. Davis D, Bordage G, Moores LK, Bennett N, Marinopoulos SS, et al. (2009) The science of continuing medical education: Terms, tools, and gaps: Effectiveness of continuing medical education: American College of Chest Physicians Evidence-Based Educational Guidelines. *Chest* 135: 8S-16S.