American Journal of Educational Research, 2019, Vol. 7, No. 1, 69-75
Available online at http://pubs.sciepub.com/education/7/1/11
Published by Science and Education Publishing
DOI:10.12691/education-7-1-11

Outcome and Future Perspectives of Pioneering Integrative Medicine Education in Taibah University: Ten Years' Experience in Saudi Arabia Medical Schools (A Medical Education Article)

Osama Hamouda[1,2], Mohammad Sweilam[3], Antar Abdellah[4], Moutasem Salih Aboonq[5], Osama Bashir Abdel-Halim[6,7], Salah Mohamed El Sayed[8,9,*], Ahmed Osama Hamouda[10]

[1]Integrative Medicine Course, Taibah Faculty of Medicine, Taibah University, Al-Madinah Al-Munawwarah, Saudi Arabia
[2]Department of Dermatology, Maternity and Children Hospital, Ministry of Health and Assistant professor in Integrative Medicine, College of Medicine, Taibah University, K.S.A
[3]Department of Statistics, Community College, Taibah University
[4]Department of Curriculum Studies, College of Education, Taibah University
[5]Department of Physiology, Taibah College of Medicine, Taibah University, Al-Madinah Al-Munawwarah, Saudi Arabia
[6]Department of Pharmacognosy and Pharmaceutical Chemistry, College of Pharmacy, Taibah University, Al madinah Almonwwarah, Saudi Arabia
[7]Department of Pharmacognosy, Faculty of Pharmacy, Mansoura University, Mansoura, 35516 Egypt
[8]Department of Medical Biochemistry and Molecular Medicine, Taibah Faculty of Medicine, Taibah University, Al-Madinah Al-Munawwarah, Saudi Arabia
[9]Department of Medical Biochemistry, Sohag Faculty of Medicine, Sohag University, Egypt
[10]Residency Training Program, Mansoura university hospitals, Faculty of Medicine, Mansoura University, Egypt
*Corresponding author: salahfazara@yahoo.com

Received November 12, 2018; Revised December 28, 2018; Accepted January 18, 2019

Abstract **Background**: Patients prefer treatments that are safe, curative and cheap. Integrative medicine (IM) gathers the best of modern medicine and other types of human medicine e.g. prophetic medicine and others. College of Medicine at Taibah University (CMTU, Saudi Arabia) is the first pioneering medical school in Saudi Arabia and the Middle East in introducing IM education. Patients' needs to IM increase in case of treatment failure e.g. cancer patients who can't afford chemotherapy and radiotherapy. Unfortunately, lack of teaching IM at medical schools deprives both physicians and patients from many therapeutic benefits e.g. Al-hijamah (wet cupping therapy of prophetic medicine), nigella sativa and others depriving. **Objectives**: to investigate medical students' satisfaction with IM medical education for better health benefits. **Design**: A prospective cross-sectional study. **Settings:** College of Medicine at Taibah University (CMTU, Saudi Arabia). **Subjects and Methods:** CMTU introduced IM education in its medical curriculum to enhance patients and physicians medical knowledge. Taking ethical committee approval and agreements of participating students, this study was done in CMTU over the past ten years (2007-2016). 650 students (out of 1000 students) shared in the study questionnaire. **Sample size:** 650 medical students. **Main Outcome Measures:** Vast majority of the investigated students (611/650, 94%) were satisfied with IM course. **RESULTS:** 320 students (49%) considered the IM course to be excellent to very good for both physicians and patients' medical knowledge. 93.8% (610/650) gave a positive evaluation. 55% (360/650) evaluated the course knowledge as good to very good for benefiting patients in the future. 47% (305/650) liked to take IM as a future minor while 38% (247/650) of the investigated students already decided their future IM subspecialties. 91% (591/650) accepted Arabic language (student' mother tongue) to be the main language of studying IM. **Conclusion:** Teaching IM at CMTU is promising, welcomed by medical students, expected to gain better patients preference and should be generalized in other Saudi and international medical schools.

Keywords: *integrative medicine, feedback, Taibah University, students' attitudes, medical education*

Cite This Article: Osama Hamouda, Mohammad Sweilam, Antar Abdellah, Moutasem Salih Aboonq, Osama Bashir Abdel-Halim, Salah Mohamed El Sayed, and Ahmed Osama Hamouda, "Outcome and Future Perspectives of Pioneering Integrative Medicine Education in Taibah University: Ten Years' Experience in Saudi Arabia Medical Schools (A Medical Education Article)." *American Journal of Educational Research*, vol. 7, no. 1 (2019): 69-75. doi: 10.12691/education-7-1-11.

1. Introduction

Patients are adherent to medical treatments that are curative or at least effective, safe and economic. To be more adherent to physicians' advices, patients' treatments are better to be given in a pure medical environment under close medical supervision. When a treatment failure is reached where physicians decide that patients should receive no active treatment e.g. surgery or chemotherapy for unfit patients, patients usually seek for a second opinion and they may ask for medical advices from other physicians or from non-medical healers. Here is the major problem where non-qualified non-medical personnel may decide remedies or treatment options for the patients.

Integrative medicine (IM) is the medical science that integrates the best of complementary and alternative medicine (CAM) practices e.g. prophetic medicine (Arabic medicine), Chinese medicine, Ayurveda (Indian medicine), chiropractic, acupuncture, massage, and others with the best of conventional medicine. [1] IM treats the "whole person" and focuses on the wellness and health rather than on treating a particular disease and emphasizes the patient-physician relationship. [2] IM tools include evidence-based conventional (modern) medicine, complementary medicine and nutritional therapy to improve life quality. [3] An example of a useful remedy that is preferred by many patients in the Arabic world is Al-hijamah (wet cupping therapy of prophetic medicine) that treats many diseases differing in etiology and pathogenesis through excreting noxious substances outside the human body in addition to exerting many other therapeutic benefits. [4] So many patients worldwide prefer including Al-hijamah in the medical curriculum for regular practice in outpatient clinics and hospitals. [4] IM consultation is more than providing reliable information to patients about the proper use of IM therapies to alleviate disease symptoms. Physicians should have extensive IM knowledge for addressing the unmet needs of patients e.g. cancer patients. [5]

Historically, the University of Arizona (USA) was pioneering in introducing CAM and IM academic education where IM lectures were continuously offered since 1975. [6] To the authors of this article, the main aim of teaching IM in medical schools is to make medical students familiar with IM, which will satisfy the patients' needs and attract them for being more compliant and adherent. Otherwise, future physicians may deny IM in the future and stand against it giving the chance to unqualified and non-specialist personnel to malpractice IM that may cause patients harm. IM medical education aims also at delivering maximal therapeutic benefits to patients [7] and closing the way in the face of unqualified non-medical practitioners who benefit financially from practicing IM, especially herbal medicine. Patients usually ask for medical advices from herbal shops and may be misguided by many herbalists.

However, introducing evidence-based medicinal plants having different preparations e.g. nigella sativa may be quite helpful. Nigella sativa is highly recommended in prophetic medicine and also in Ayurveda for treating a wide range of different diseases. [8] Since 1995, Eisenberg and his colleagues have studied the scientific and medical education of CAM treatments and co-directed two Harvard Medical Schools (HMS) continuous medical education courses devoted to CAM therapies. Eisenberg co-directed a fellowship training program funded by the national institutes of health (NIH) in CAM at HMS. [9] Now, Arizona Center for IM at University of Arizona Health Sciences is a leading international research center in IM. [10]

Our study is a cross-sectional study that was done at the college of medicine of Taibah University (CMTU, Saudi Arabia) over a relatively long period (2007 – 2016). Our study aimed at evaluating the medical students' future perspective towards including IM remedies in the medical curriculum for evaluating the expected patients' preferences regarding IM. The study included a questionnaire-based approach putting into account that physicians' medical education is the cornerstone for future patients' benefits and compliance.

2. Subjects and Methods

2.1. Ethics Committee Approval and Consent to Participate in the Study

This cross-sectional study was done over the past ten years (2007-2016) where 650 students (out of 1000 students) shared in it. Ethics committee agreement for performing the study was gained from the ethical committee of CMTU. Joining the study questionnaire was a voluntary choice. All participating medical students gave a written agreement prior to joining the study. Our study did not contain any individual person's data.

Our study took a relatively long period (from September 2007 till June 2016). IM academic educational course was introduced in 30 hours (lecture-based learning) per year (3rd year medical students) for the first two years (2007-2008) then it was reduced later to 15 hours (also lecture-based learning). In 2016, the medical educational system in CMTU changed to the Manchester medical educational system (Problem-based learning, PBL).

In the former (lecture-based learning), medical students received detailed IM lectures where the teaching effort done by the teacher was more in explaining IM details while in the latter (PBL), the educational system had changed completely to be student-centered with decreased IM details in the lectures. IM course topics usually handle independent themes like: defining IM, development of sickness, nutritional treatments, balanced diets, macrobiotics, medicinal plants, prophetic medicine, traditional Chinese medicine, and acupuncture, Ayurveda, IM for cancer, homeopathy, chiropractic, and detoxification.

In order to evaluate future perspectives of medical students in CMTU who received their IM education over the past ten years (2007-2016), a questionnaire to evaluate satisfaction and future perspectives regarding IM education was developed (appendix 1).

The questionnaire was done after finishing studying the IM course and related exams. Print outs of the questionnaire were given to the students who voluntarily agreed to share in the study. The questionnaire consisted of many items of the mixed type questions; some questions required students to make a choice

(accepted/good/ very good/ excellent), while others asked them to express own opinions.

2.2. Assessment of Students' Satisfaction with IM and Future Patients' Preferences

We evaluated the degree of medical students' satisfaction regarding IM for treating different patients, academic educational process, and future patients' benefits and IM teacher. In the same context, medical students' assessment, perspectives of future patients' preferences and evaluation of the IM course in general were recorded.

2.3. Future IM Academic Educational Perspectives

Students' hopes for future specialization (based on students' hope and ability to benefit patients) were assessed. Students' opinions regarding studying IM as a future postgraduate minor (as an additional course) were estimated in addition to students' opinions regarding the possibility of studying IM in Arabic (mother tongue) for better patients' care and health education and its impact on medical and health education to both medical students and patients.

N.B. IM is currently studied in English as a part of the medical curriculum delivered to medical students at CMTU.

2.4. Statistics

Study results were statistically analyzed using SPSS 20 program. Referring to the appendix 1 gives a complete version of the questionnaire. Chi-Square test was used in this cross-sectional study. Significance values were set as *p<0.05, **p<0.01 and ***p<0.001.

3. Results

This study was done in CMTU (Saudi Arabia) in both the male side (MS, male campus) and the female side (FS, female campus) over 10 years duration (2007-2016). 650 students (out of 1000 students) shared in the study. We investigated medical students' satisfaction and evaluation with IM academic education and expected future patients' preferences and patients' benefits. We also investigated future IM academic educational perspectives e.g. studying IM as a future minor for better patients' benefits and studying IM in Arabic language (mother tongue) for better patients' care and health education.

3.1. Students' Satisfaction with IM Education, Future Patients' Benefits and Future Perspectives

To compare between students' satisfaction responses regarding course contents and expected future benefits for patients treatment and health education (poor, fair, good, very good or excellent) in different academic years, Chi-Square test was used (value = 112.708), which was highly significant (p<0.001). This result confirmed that vast majority of the investigated students (611/650, 94%) tended to be satisfied with the course year by year. About 320 students (49%) considered the IM course to be excellent to very good for both physicians and patients medical knowledge (Figure 1A).

IM academic education in CMTU seems to be promising. Investigated medical students supported IM course, future patients' benefits and educational outcomes. Statistical analyses revealed that IM course was an effective addition to CMTU educational program. To evaluate students' satisfaction responses regarding IM teaching and satisfaction with the teacher (poor, fair, good, very good or excellent) in the different academic years, Chi-square test was used where its value was 112.708. Figure 1A showed that students significantly (p<0.001) loved the IM course. The degree of loving the course varied from fair, good, very good to excellent.

3.2. Students' Evaluation of IM Course

Majority of the investigated students (610/650, 93.8%) evaluated the IM course health benefits for patients positively. They considered IM education to be so important varying from fair, good; very good to excellent. 55% of the students (360/650) evaluated the course knowledge to range from good to very good for benefiting patients in the future. To compare between students' evaluation of IM course in general in different academic years, Chi-square test was used where the value was 111.446. Figure 1B shows the results with the significance level at ($\alpha = 0.05$). Investigated students were significantly satisfied ($P<.05$) with both IM teaching, expected patients' benefits and the teacher. The degree of students' satisfaction varied from fair, good, very good to excellent (Figure 1B).

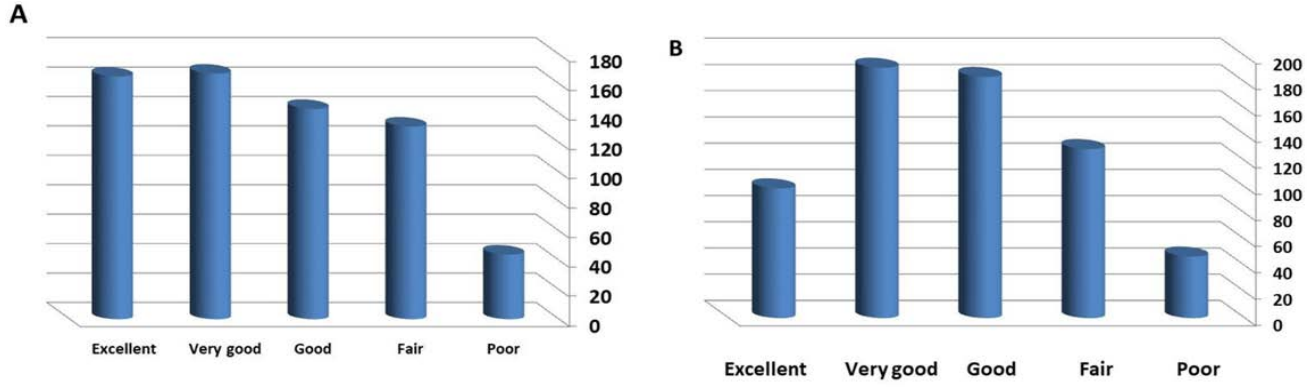

Figure 1. Overall attitude of medical students towards IM education: A. Students' satisfaction regarding IM academic educational process and IM teacher. **B.** Students' evaluation of the IM course for future patients' benefits.

3.3. Future Specialization in IM for Better Patients' Benefits

To compare between students' responses in the different academic years regarding future specialization in IM (for better patients' benefits) after graduation from the medical school, Chi-Square test was used. Table 1 shows the results with the significance level at (α = .05). Students' preferences for their major have significantly changed (P<0.01) after studying the medical courses along the first three years in CMTU.

Table 1. Students' future hopes for specialization (for better patients' benefits)

Percent	Frequency	Specialty
6.8	44	Surgery
5.4	35	Pediatrics
1.8	12	Oncology
2.0	13	Orthopedics
0.3	2	Psychiatry
2.5	16	Internal medicine
2.0	13	Emergency medicine
0.8	5	Urology
1.1	7	Community and family medicine
1.8	12	Neurology
1.1	7	Dermatology and venereology
2.9	19	Gynecology
3.2	21	Cardiology
1.5	10	Ophthalmology
0.5	3	Forensic medicine
66.3	431	Did not decide yet
100.0	650	Total

3.4. Taking IM as a Minor Specialty for Better Patients' Benefits

Regarding taking IM as a minor (future additional specialty for better patients' care and health education), Figure 2A exhibited students' responses with the significance level at α = .05. Students' preferences to take IM as a minor (for better patients' benefits) were significant (P<.001) after studying IM course in CMTU. 47% of the investigated students (305/650) agreed to take IM as a future minor (Figure 2A). They liked to take IM as a future minor for patients' benefits and preferences. Value of Chi-square was 3.255.

38% (247/650) of the investigated students decided the IM subspecialties they liked to take as a future minor for patients' benefits and preferences. Regarding students' future hopes about subspecialties in IM (for better patients' benefits), Chi-square test was used where its value was 2294.818 (Table 2). Students' future preferences to be specialized in IM (as a minor for better patients' benefits) were significant (p<.001) after studying IM course. 38% of the investigated students preferred many IM subspecialties for better patients' benefits.

3.5. Magnitude of Benefits to Students and Patients when Studying IM in Mother

Regarding accepting the Arabic language (student' mother tongue for better patients' care and health education) to be the main language of studying IM, majority of students (591/650, 91%) agreed. To compare between students' responses in the different academic years, Chi-Square test was used where its value was 432.154. Figure 2B shows the results where significance level was set at α = .05. Students significantly preferred to study IM in mother tongue, Arabic language (P<.05) and thought that will be better for patients' benefits and future health education.

Table 2. Students' hopes regarding subspecialties in integrative medicine (for better patients' benefits)

Percent	Frequency	Specialty
4.2	27	Prophetic medicine
10.0	65	Chinese medicine
0.3	2	Medicinal plants
11.1	72	Macrobiotic
3.8	25	Acupuncture
1.1	7	Integrative medicine
0.6	4	Chiropractic
2.9	19	Homeopathy
1.1	7	Energy
2.9	19	Nutrition
62.0	403	Not decide yet
100.0	650	Total

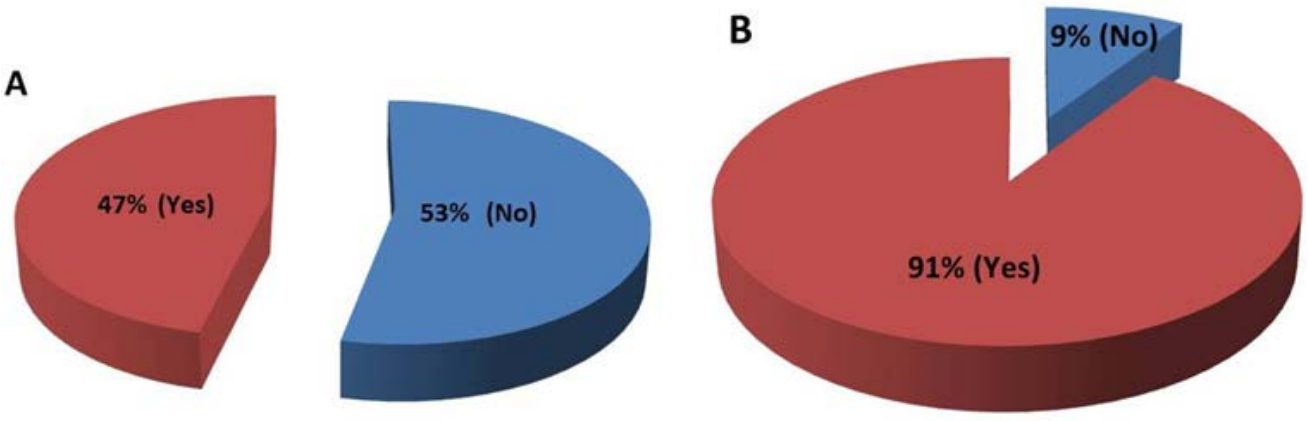

Figure 2. Future IM academic educational perspectives: **A.** Students' opinions regarding studying IM as a future minor (an additional course) for better patients' benefits. **B.** Students' opinion regarding studying IM in Arabic (mother tongue) for better patients' care and health education

4. Discussion

CMTU (in Saudi Arabia) is pioneering in introducing a medical education course in IM that is recently introduced in many leading American universities. [9,10] Patients usually benefit from IM (including prophetic medicine) therapeutic benefits being natural, effective and safe therapies. [4,8] Promising evidence-based example of that are the powerful anticancer effects of Ajwa date fruit (A cultivable medicinal plant tree in Al-Madinah, Saudi Arabia) that was recently reported to revert malignant cells back into a normal-like behavior owing to its potent antioxidant effects. [11] In 2007, adults in the United States spent $33.9 billion out of pocket on visits to CAM practitioners and purchases of CAM products. [12] So many reported studies investigated the cost-effectiveness of IM treatments. [13] IM proved effective in treating many diseases e.g. chronic low back pain patients, [14] tinnitus [15] and developmental and behavioral disorders. [16] Pediatric IM practitioners are increasing in number throughout USA due to improvements in patients' health outcomes to attention-deficit hyperactivity disorder including dietary therapies, nutritional supplements, environmental hygiene and neurological feedback. [3] Interestingly, IM is an increasingly popular component in oncology care e.g. for the treatment of malignant ascites. [17]

Many cancer patients and their family members are looking for medical advices regarding IM use. [18] This augments the value of IM education in medical schools to avoid forcing patients to deal with non-medical traditional healers that may not prescribe the suitable medical advice. [19] Interestingly, this cross-sectional study showed that the majority of investigated medical students (about 95%) were satisfied with IM teaching procedure, future patients' preferences and the IM teacher (Figure 1A). They were also happy with IM education and IM course in general for gaining better patients' benefits. Investigated medical students considered IM education favorable (ranging from fair, good, very good and excellent) for establishing a good medical practitioner (Figure 1B). This positive attitude was highly significant ($p<0.001$).

Many patients believe that the benefits of IM exceed its costs. Surveys have shown increasing numbers of patients in USA who prefer using IM [20,21,22] that may cost $34 billion--11% of all US out-of-pocket healthcare expenditures [23] that are considered economic. This urged us to teach IM at Arabic universities and introduce it in the medical educational curriculum. IM is a promising good candidate for its cost-effectiveness and noninvasive remedies. IM encourages healthy lifestyle change and focuses on the whole person to improve health beyond the targeted disease or condition.

We understand that academic medical education and practice of IM are vital to medical students (future physicians e.g. clinical oncologists) and their patients. Investigated students were variable regarding their hopes for future medical careers and specialization for better patients' benefits (Table 1). Students' interests in IM subspecialties included almost all IM sciences e.g. Chinese medicine, homeopathy, chiropractic and others for better patients' benefits (Table 2).

IM education in Saudi universities seems to be vital for future generations of physicians. Taking oncology as an example where cancer patients face many problems e.g. treatment failure despite advances in cancer care. This exaggerates the needs for IM education and practice under close medical supervision. Cancer patients continue to experience a substantial level of unmet physical, social, employment, financial, emotional, and spiritual needs. [24,25] Cancer patients may exhibit anxiety, depression, anger, and fear. Untreated mood disorders can negatively affect patients' quality of life pain, and response to chemotherapy. [26,27] Others may exhibit pain, fatigue, sleep disorders, cognitive dysfunction, and other complaints. [28] Patients may prefer using IM, especially cancer patients suffering from unmet emotional and physical needs than patients who are satisfied with their medical care. [29] Psychological and social factors e.g. depression, anxiety and inadequate social support may enhance the morbidity and mortality among cancer patients. [30,31]

Lack of satisfactory treatment outcomes may force patients to ask for a second opinion. Many reports confirmed that disappointment and lack of satisfaction regarding conventional medicine is not the only motivation for patients to use IM. [32] Most patients who use IM for cancer treatment view it as complementary rather than alternative. [33] Even though most patients indicated that they prefer to get a physician’s referral to use CAM. [34] CAM practices can be effectively 'integrated' into mainstream medicine. [35] Complementary therapies and integrative care are definitely cost-effective. [36]

IM preference is also evident in our cross-sectional study where a large proportion of the investigated students (47%) gave supporting opinions regarding studying IM as a minor (an additional future course for better patients' benefits) (Figure 2A). Vast majority of students (91%) recommended studying IM in Arabic language as a mother tongue for better patients' care and health education (Figure 2B). Studying IM in mother tongue helps students to achieve easy fast understanding of the curriculum and enables patients to increase their health background regarding IM therapies for better patients' preference and adherence. However, this topic is still controversial as so many physicians recommend continuing education in English in order not to lose daily contact with advanced achievements in medical sciences. A third party tries to combine both altogether through keeping the medical terminology in English, giving a full translation of the terminology into Arabic and allowing the rest of the medical literature to be in Arabic (mother tongue). This gives the virtue of keeping contact with momentary advances in medicine particularly IM and enhancing patients' compliance, medical knowledge and health education. The authors agree more with the third party. Further assessments and IM course updating may be beneficial to go with the international standards in IM medical education and practice. Moreover, the need is still high for more efforts to establish an IM center (for better patients' benefits) to improve research and sustain IM clinics in the leading Arab Medical schools and hospitals to be comparable with the IM centers in American Medical schools and hospitals.

5. Conclusions

Our investigated medical students had a strongly positive attitude towards studying and specializing in IM for better patients' care and health education. It is evident that they have high levels of interest in IM. IM education is pioneering in Saudi Arabia compared to other Arabic countries where CMTU is the leading university in introducing IM education.

Limitations

The few number of IM teaching hours.

Conflicts of interest

Authors declare that there are no competing interests.

Funding

Authors declare that they received no funds to perform the study or its steps. Study was supported by the authors themselves.

References

[1] Maizes V, Schneider C, Bell I, Weil A. Integrative medical education: development and implementation of a comprehensive curriculum at the University of Arizona. Acad Med. 2002; 77(9): 851-60.

[2] Tabish SA. Complementary and Alternative Healthcare: Is it Evidence-based? Int J Health Sci (Qassim). 2008; 2(1):V-IX.

[3] Esparham A, Evans RG, Wagner LE, Drisko JA. Pediatric Integrative Medicine Approaches to Attention Deficit Hyperactivity Disorder (ADHD). Children (Basel). 2014; 1(2): 186-207.

[4] El Sayed SM, Al-quliti A, Mahmoud HS, Baghdadi H, Maria RA, Nabo MM et al. Therapeutic benefits of Al-hijamah: in light of modern medicine and prophetic medicine. AJMBR. 2014; 2: 46-71.

[5] Frenkel M. Components of a successful integrative medicine clinical consultation. J Soc Integr Oncol 2008; 6: 129-133.

[6] Wetzel MS, Eisenberg DM, Kaptchuk TJ. Courses involving complementary and alternative medicine at US medical schools. JAMA. 1998; 280(9): 784-7.

[7] Perlman AI, Eisenberg DM, Panush RS. Talking with patients about alternative and complementary medicine. Rheum Dis Clin North Am. 1999; 25(4): 815-22.

[8] Ijaz H, Tulain UR, Qureshi J, Danish Z, Musayab S, Akhtar MF et al. Review: Nigella sativa (Prophetic Medicine): A Review. Pak J Pharm Sci. 2017 Jan; 30(1): 229-234.

[9] Eisenberg DM. David M. Eisenberg, MD: integrative medicine research pioneer. Interview by Karolyn A Gazella and Suzanne Snyder. Altern Ther Health Med. 2006; 12(1): 72-9.

[10] Budzynska K, Gardner ZE, Low Dog T, Gardiner P. Complementary, holistic, integrative medicine: advice for clinicians on herbs and breastfeeding. Pediatr Rev. 2013; 34(8): 343-52; 352-353.

[11] Khan F, Khan TJ, Kalamegam G, Pushparaj PN, Chaudhary A, Abuzenadah A, et al. Anti-cancer effects of Ajwa dates (Phoenix dactylifera L.) in diethylnitrosamine induced hepatocellular carcinoma in Wistar rats. BMC Complement Altern Med. 2017; 17(1): 418.

[12] Nahin RL, Barnes PM, Stussman BJ, Bloom B. Costs of complementary and alternative medicine (CAM) and frequency of visits to CAM practitioners: United States, 2007. Natl Health Stat Report. 2009; (18): 1-14.

[13] Herman PM, Craig BM, Caspi O. Is complementary and alternative medicine (CAM) cost-effective? A systematic review. BMC Complement Altern Med. 2005; 5: 11.

[14] O'Connor BB, Eisenberg DM, Buring JE, Liang CL, Osypiuk K, Levy DB, et al. Within-team Patterns of Communication and Referral in Multimodal Treatment of Chronic Low Back Pain Patients by an Integrative Care Team. Glob Adv Health Med. 2015; 4(2): 36-45.

[15] Wolever RQ, Price R, Hazelton AG, Dmitrieva NO, Bechard EM, et al. Complementary Therapies for Significant Dysfunction from Tinnitus: Treatment Review and Potential for Integrative Medicine. Evid Based Complement Alternat Med. 2015; 2015: 931418.

[16] Rosen LD, Bailey ML, Becker D, Culbert TP, McClafferty H, Sahler OJ, et al. Sensory integration therapies for children with developmental and behavioral disorders. Pediatrics. 2012; 129(6): 1186-9.

[17] Li Y, Lou Y, Deng B, Jia L. Meta-analysis on integrative medicine for the treatment of malig- nant ascites: a comparative study. J Tradit Chin Med. 2015; 35(1): 11-4.

[18] Frenkel M, Cohen L. Effective communication about the use of complementary and integrative medicine in cancer care. J Altern Complement Med. 2014;20(1):12-8.

[19] Al-Rowais N, Al-Faris E, Mohammad AG, Al-Rukban M, Abdulghani HM. Traditional healers in Riyadh region: reasons and health problems for seeking their advice. A household survey. J Altern Complement Med. 2010; 16(2): 199-204.

[20] Barnes PM, Powell-Griner E, McFann K, Nahin RL. Complementary and alternative medicine use among adults: United States, 2002. Hyattsville, MA: National Center for Health Statistics; 2004.

[21] Eisenberg DM, Davis RB, Ettner SL, Appel S, Wilkey S, Van Rompay M, et al. Trends in alternative medicine use in the United States, 1990-1997. JAMA. 1998; 280(18): 1569-75.

[22] Eisenberg DM, Kessler RC, Foster C, Norlock FE, Calkins DR, Delbanco TL. Unconventional medicine in the United States: prevalence, costs, and patterns of use. New Engl J Med. 1993; 328: 246-52.

[23] Nahin RL, Barnes PM, Stussman BJ, Bloom B. Costs of complementary and alternative medicine (CAM) and frequency of visits to CAM practitioners: United States, 2007. Natl Health Stat Report. 2009 30; (18): 1-14.

[24] Barg FK, Cronholm PF, Straton JB, Keddem S, Knott K, Grater J, et al. Unmet psychosocial needs of Pennsylvanians with cancer: 1986-2005. Cancer 2007; 110: 631-639.

[25] Houts PS, Yasko JM, Harvey HA, Kahn SB, Hartz AJ, Hermann JF, et al. Unmet needs of persons with cancer in Pennsylvania during the period of terminal care. Cancer 1988; 62: 627-634.

[26] Giese-Davis J, Collie K, Rancourt KM, Neri E, Kraemer HC, Spiegel D. Decrease in depression symptoms is associated with longer survival in patients with metastatic breast cancer: a secondary analysis. J Clin Oncol 2011; 29: 413-420.

[27] Spiegel D. Mind matters in cancer survival. JAMA 2011; 305: 502-503.

[28] Mitchell GK. The role of general practice in cancer care. Aust Fam Physician 2008; 37: 698-702.

[29] Mao JJ, Palmer SC, Straton JB, Cronholm PF, Keddem S, Knott K, et al. Cancer survivors with unmet needs were more likely to use complementary and alternative medicine. J Cancer Surviv 2008; 2: 116-124.

[30] Pinquart M, Duberstein PR. Depression and cancer mortality: a meta-analysis. Psychol Med 2010; 40: 1797-1810.

[31] Satin JR, Linden W, Phillips MJ. Depression as a predictor of disease progression and mortality in cancer patients: a metaanalysis. Cancer 2009; 115: 5349-5361.

[32] Kappauf H, Leykauf-Ammon D, Bruntsch U, et al. Use of and attitudes held towards unconventional medicine by patients in a department of internal medicine/oncology and haematology. Support Care Cancer 2000; 8: 314-322.

[33] Richardson MA, Sanders T, Palmer JL, Greisinger A, Singletary SE. Complementary/alternative medicine use in a comprehensive cancer center and the implications for oncology. J Clin Oncol 2000; 18: 2505-2514.

[34] Morant R, Jungi WF, Koehli C, Senn HJ. (Why do cancer patients use alternative medicine?). Schweiz Med Wochenschr 1991; 121: 1029-1034.

[35] Jonas WB, Eisenberg D, Hufford D, Crawford C. The evolution of complementary and alternative medicine (CAM) in the USA over the last 20 years. Forsch Komplementmed. 2013; 20(1): 65-72.

[36] Herman PM. Evaluating the economics of complementary and integrative medicine. Glob Adv Health Med. 2013 Mar; 2(2): 56-63.

Appendix 1

A questionnaire on IM students' attitudes

Name: (optional) _____
Academic year: _____
Please answer the following questions sincerely; your answer will be kept confidential and will be used for scientific purposes only.

1	I think the IM course as a whole is…for students education and patients' benefits	poor	accepted	good	Very good	excellent
2	*What is the specialization you would like to have your major in (based on your hope and ability to benefit patients)?*					
3.	What is your evaluation of the IM course in general for future patients' benefits					
4	*Do you intend to take IM as a minor?*		yes		No	
5	*If you answered (yes), write down the specialization you wish to study…*					
6	*Are you interested in studying IM in mother tongue (Arabic language), receiving IM updates for educational and patients' benefits, insert your email address here.*					
7	*Add any other remarks you wish to let us know..*					