Teaching residents mental health care

Robert C. Smith[a],[*], Heather Laird-Fick[a], Francesca C. Dwamena[a], Laura Freilich[a], Brian Mavis[b], Katelyn Grayson-Sneed[c], Dale D'Mello[d], Mark Spoolstra[e], David Solomon[b]

[a] 788 Service Road, Michigan State University, Dept. of Medicine, East Lansing, MI 48824, USA
[b] 965 Fee Road, Michigan State University, Office of Medical Education Research and Development, East Lansing, MI 48824, USA
[c] 404 Wilson Road, Michigan State University, Dept. of Communication, East Lansing, MI, USA
[d] 965 Fee Road, Michigan State University, Dept. of Psychiatry, East Lansing, MI 48824, USA
[e] 100 Michigan Street NE, Michigan State University, Dept. of Medicine, Grand Rapids, MI 49503, USA

ARTICLE INFO

ABSTRACT

Objective: We tested the hypothesis that trained medical faculty can train residents effectively in a mental health care model.
Methods: After the authors trained medical faculty intensively for 15 months in primary care mental health, the newly trained faculty taught medical residents intensively. Residents were evaluated pre- and post-residency and compared to non-equivalent control residents in another city. Using ANOVA, the primary endpoint was residents' use of a mental health care model with simulated patients. Secondary endpoints were residents' skills using models for patient-centered interviewing and for informing and motivating patients.
Results: For the mental health care model, there was a significant interaction between study site and time (F = 33.51, p < .001, Eta^2 = .34); mean pre-test and post-test control group scores were 8.15 and 8.79, respectively, compared to 7.44 and 15.0 for the intervention group. Findings were similarly positive for models of patient-centered interviewing and informing and motivating.
Conclusions: Training medical faculty to teach residents a mental health care model offers a new educational approach to the widespread problem of poor mental health care.
Practice Implications: While the models tested here can provide guidance in conducting mental health care, further evaluation of the train-the-trainer program for preparing residents is needed.

© 2018 Elsevier B.V. All rights reserved.

1. Introduction

Approximately 50% of the U.S. population will have a mental health disorder (includes substance use disorders) at some time in their lives [1,2], but only 25% receive care, compared to the 60–80% of heart disease patients who receive care [3,4]. There are prevalent concerns about mental health care not meeting standards [5–8]. Psychiatrists see only 15% of all patients with mental disorders [9]. Research shows that two-thirds of physicians cannot obtain a timely psychiatric consultation [10], and that psychiatrists' numbers are deficient in over 95% of U.S. counties, some counties having none [11].

This severe shortage means that 85% of patients receive sole care from medical (non-psychiatry) physicians [12–15]. One explanation for substandard mental health care is that these

physicians receive very little clinical training and experience in either medical school [16] or residency [14,17]. Efforts to help physicians already in practice have occurred, for example, to provide more time for mental health care by controlling their competing demands and efforts to improve payment structures for mental health care [18]. More effective, collaborative care places a psychiatrist (and care manager) in contact with the clinician to co-manage patients with mental disorders [19,20]. Collaborative care over the last 20 years has had significant success and needs to be markedly increased, but the shortage of psychiatrists and the obligatory small numbers of collaborative care programs will always limit their scope from a population perspective, in which respect Healthy People 2020 reports that the mental health problem has not improved, rather, it worsens [21].

Planners infrequently consider training medical faculty and/or residents when addressing the mental health care problem. Although the Institute of Medicine (IOM) recommended a marked increase in teaching across all years of medical education [22], there are too few psychiatry or medical faculty trained in mental health care to conduct the much more intensive training needed to

Table 1
Mental Health Care Model.[a]

Education
1 *ASK* – "What's Your Understanding"

a Their problem/diagnosis, why they have it, its outcome

• What they want done

2 *TELL* –

• "I Have Good News"

a Ominous conditions not found

• More testing/consultation not necessary

i You will follow-up for any change

• You know diagnosis – name/explain it

• "You Need A Better Treatment

• Depression makes pain worse → needs medication

i Problem is' real' or 'not in head' (not a 'psych case')

• Narcotics make pain and depression worse → need to slowly taper and discontinue

• Improvement likely (cure unlikely)

3 *ASK*– "Please summarize what you've heard"

Commitment
1 ASK – "Are you committed to treatment"

2 TELL – "You need to be active, I can't do by myself "

3 ASK – "Please summarize your commitment"

Goals
1 Obtain *long-term goals* → achieve via Plan (next)

Negotiate Plan
1 *ALL plans occur as scheduled* = non-prn

2 *Antidepressant* – start and/or adjust

3 *Addicting medications* (narcotic; benzodiazepine; amphetamine)

a Determine present dose

• Regularize dose schedule

• Start taper @ one pill/day each week

• Ask them to think about which pill to stop in one week

4 *Symptomatic medication* – scheduled

5 *Exercise* program – determine present level → prescribe small increase – scheduled

6 *Social activity* – determine present level → prescribe small increase – scheduled

7 *Regular follow-up visits*

8 Have *patient summarize* treatment plan

9 *Praise* patient for commitment

10 *Other aspects of treatment* plan (relaxation, diet, PT, OMT) – later, after first 2-3 visits

11 Do not advise more tests or consultation (other than PT or OMT)

At each of the 4 steps, use NURS at least once; NURS skills maximize the clinician-patient relationship [41].
Abbreviations: PT=physical therapy; OMT=osteopathic manipulative treatment.
NURS=**N**ame the emotion, **U**nderstand the emotion, **R**espect the emotion; **S**upport the emotion.
[a] For more details, see references [27–29,42].

graduate physicians as competent in mental health care as in medical care [23–25].

One way to offset the shortage of trained teachers is to train medical faculty in mental health care so that they subsequently can train their residents [15,26]. We hypothesized that a train-the-trainer approach would produce residents skilled in using a research-based Mental Health Care Model (MHCM). If supported, the hypothesis represents a new educational approach to the now refractory mental health care crisis.

2. Defining primary care mental health for this study

For this study, we define mental health care, beyond general psychosocial care, as skills in managing these common primary care mental health problems: depressive disorders, anxiety disorders, and prescription opioid misuse. While we believe that trained medical physicians can be prepared to handle the majority of these problems, we advocate referral to psychiatry and/or addiction specialists and/or counselors in refractory instances.

2.1. Mental health care model

Described in detail in an earlier methods paper [26], we developed the MHCM in high-utilizing patients with severe chronic pain and other medically unexplained symptom (MUS) syndromes, and we demonstrated in two randomized controlled trials that it produced clinically significant improvement in multiple physical and mental health outcomes [27–29]. Because opioid misuse, depression, and anxiety disorders were highly prevalent [30], we use the MHCM as a de facto overarching model for their primary care management—with or without MUS present. Indeed, without the MUS component in primary care patients, treatment of depression and anxiety is less complicated and still fits within the MHCM, which we recommend as a working model to guide all primary care mental health care.

The MHCM in Table 1 and Fig. 1 comprises a patient-centered model [31] as its centerpiece, shown more extensively in Table 2. It is integrated with four dimensions derived from the motivational interviewing literature [32]: Educating the Patient, Obtaining a Commitment, Establishing Goals, and Negotiating a Treatment Plan. The latter is where specific pharmacological and non-pharmacological treatments occur for depression and anxiety disorders and for prescription substance misuse. The preceding three elements (educating, commitment, goals) are the factors that ensure patient acceptance, implementation, and adherence to the specific treatment plan, presented in greater detail in the earlier methods paper [26].

3. Overview of prior publications from this study

We report the overall outcome of a 5-year study. Because we previously published the details of the curriculum in this journal, we now briefly summarize [26]. For the theoretical, conceptual, and pedagogical back drop of the study, we identified the biopsychosocial (BPS) model as the study's theoretical base because it advocates integrating the mental and physical disease aspects of patients [33]. Social learning (cognitive) theory and sociocultural theory anchor the study pedagogically, expanding education to include reflection and self-awareness as aspects of care and recognizing the important influences of culture and community on care [34,35]. Next, the study reflects not only the general needs of society for improved mental health care but also needs specific to this topic for: residents, training support, patients, education, and the curriculum. Finally, we based the study on the principles of curriculum development in medical education [36]. We later, in Methods, summarize relevant material,

previously published in this journal, about several measures used in this study [37–40].

4. Methods

4.1. Design, setting, and participants

We trained medical faculty intensively in mental health care and they then trained residents intensively during a 5-year grant (September 30, 2011 to September 29, 2016) at Michigan State University; with a 1-year no-cost extension, the evaluation was completed in September 2017. Residents were evaluated before and after (pre-post) a 3-year training program. We compared intervention residents to untrained, non-equivalent control residents from a similar community-based program in another city where there was a similar mix of patients and similar availability of mental health professionals. All intervention residents were required to participate in the mental health care training. All training and control residents were required to participate in evaluations unless unavailable for patient care reasons (e.g., on intensive care unit rotation) or vacation. The University Review Board approved this project.

4.2. Intervention

4.2.1. Learning objectives *comprised five models*

1) Mental Health Care Model (MHCM); 2) patient-centered interviewing model (PCI); 3) informing and motivating model (I&M); 4) personal awareness; and 5) team and collaborative care. The first three models are presented in Tables 1–3. They are behaviorally-defined [29,41–43], cost-effective [44], and research-based [27,28,31]. The MHCM is the focus of this paper. The PCI and I&M models are secondary endpoints.

4.2.2. Training medical faculty

For one half-day per week for 15 months (10% FTE), between January 2012 and June 2013, two medical faculty were trained in the above objectives. They began training PGY1 residents in July 2012 and PGY2/3 residents in July 2013. Approximately half of faculty training consisted of co-teaching with the faculty authors who were training them: two mental health care-trained medical

Fig. 1. The Mental Health Care Model (MHCM).
PCI = patient-centered interaction.

faculty (RCS, FCD) and a psychiatrist (DD). Co-teaching did not occur during later hypothesis-testing.

4.2.3. Teaching residents

Internal medicine residents received approximately 75 h of training in each of three training years from July 2012 to June 2016. Training was predominantly experiential and comprised [26]:

1) PGY1—On a one-month, full-time rotation, 6–8 residents received training in one of two yearly rotations. Repeated direct observation and feedback on using the first three models (MHCM, PCI, I&M) with real and simulated patients occurred after developing mastery in role play.
2) PGY2–3 – For 6 to 8 half-days in each training year, observation and feedback of patient interactions occurred in a mental health care clinic we created in the residents' own clinic setting [45]. Called the Complex Patient Clinic, referrals came from MSU faculty and residents in internal medicine and family medicine. Patients averaged 2.3 DSM-V diagnoses, mostly somatic symptom disorder, major depressive disorder, and generalized anxiety disorder; there was an average of 3.3 major comorbid medical disorders. Under supervision of newly trained faculty, residents made diagnoses and conducted management of the patients. Less than 1/3 of patients had received any care for their mental disorder, only 10.9% from a psychiatrist, even though they had been seen in the same clinic for nearly 7 years [45].
3) PGY1–3 – Eight one-hour *lectures* occurred yearly for all residents; e.g., diagnosis and management of depression, anxiety, opioid misuse, unexplained symptoms. During residents' inpatient training, there was a biweekly mental health-oriented *morning report* that addressed adapting one of the three models to patients currently on the wards. A bimonthly *Balint group* experience occurred for all residents, approximately 10 residents in each of four groups. Objectives 4 (personal awareness) and 5 (team approaches) were addressed across all activities [46].

4.3. Outcome measures

4.3.1. Primary endpoint

We trained two undergraduate students, blinded to study site and aims of the study, to use a dichotomous coding procedure to evaluate residents' conduct of the MHCM [40]. Seen in the coding sheet in Table A1 in Appendix A, there were 33 yes/no items with from 2 to 8 items representing seven variables: Educating and Informing; Motivating; Treatment Statements; Establishing a Commitment and Goals; Negotiating a Treatment Plan; Using Patient-Centered Non-Emotional Skills; and Using Patient-Centered Emotional Skills. The sum of yes-responses was used in the analysis. Previously published, Guetzkow's U ranged from 0.00 to 0.082, highly acceptable in measuring the number and location of units; Cohen's kappa for interrater reliability ranged from 0.76 to 0.97 for the seven variables and 33 individual items; overall kappa was 0.87; overall percent agreement was 95.7%, ranging by item from 85 to 100% [40]. It is the first coding method we know of for rating medical clinicians' skills in mental health care.

4.3.2. Secondary endpoints

While some material from the PCI and I&M models is included in the MHCM, we also evaluated the full models separately to better evaluate residents. The trained students used dichotomous coding procedures to evaluate residents' conduct of:

1) Patient-centered interviewing model [37]; seen in the coding sheet in Table B1 in Appendix B, there were 33 yes/no items
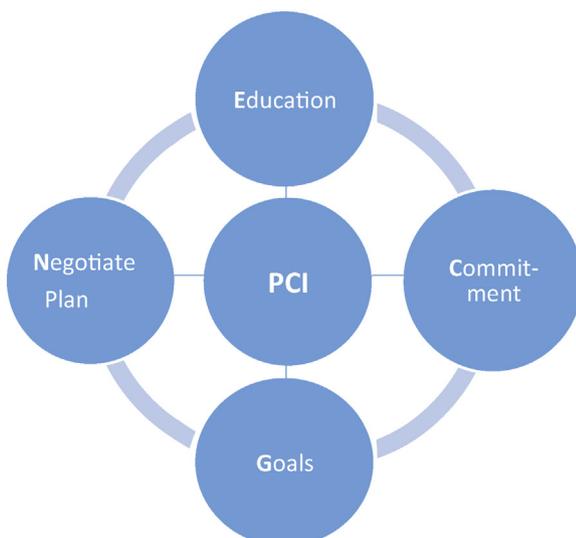
Table 2
Patient-Centered Interviewing Model[a].

STEP 1 – Setting the Stage for the Interview
1. Welcome the patient
2. Use the patient's name
3. Introduce yourself and identify specific role
4. Ensure patient readiness and privacy
5. Remove barriers to communication (sit down)
6. Ensure comfort and put the patient at ease
STEP 2 – Chief Concern/Agenda Setting
1. Indicate time available
2. Forecast what you would like to have happen in the interview; e.g., check blood pressure
3. Obtain list of all issues patient wants to discuss; e.g., specific symptoms, requests, expectations, understanding
4. Summarize and finalize the agenda; negotiate specifics if too many agenda items
STEP 3 – Opening the History of Present Illness (HPI)
1. Start with open-ended beginning question focused on Chief Concern
2. Use 'nonfocusing' open-ended skills (Attentive Listening): silence, neutral utterances, nonverbal encouragement
3. Obtain additional data from nonverbal sources: nonverbal cues, physical characteristics, autonomic changes, accouterments, and environment
STEP 4 – Continuing the Patient-Centered History of Present Illness (HPI)
1. Elicit Physical Symptom Story – Obtain description of the physical symptoms using Focusing open-ended skills
2. Elicit Personal and Social Story – Develop the more general personal/social context of the physical symptoms using Focusing open-ended skills
3. Elicit Emotional Story – Develop an emotional focus using Emotion-seeking skills
4. Respond to Feelings/Emotions – Address the emotion(s) using Emotion-handling skills: **N**aming, **U**nderstanding, **R**especting, and **S**upporting the emotion (NURS)
5. Expand Story – Continue eliciting further personal and emotional context, address feelings/emotions using Focusing open-ended skills, Emotion-seeking skills, Emotion-handling skills
STEP 5 – Transition to the Doctor-Centered History of Present Illness (HPI)
1. Brief summary
2. Check accuracy
3. Indicate that both content and style of inquiry will change if the patient is ready

[a] For more details, see the references [31,41].

Table 3
Informing/Motivating Model[a].

Establish information base and motivate
1) Determine knowledge base, the patient's specific situation, and readiness for change.
2) Give clear information about adverse health potential of habit in question, such as smoking
3) Make brief, explicit, and behaviorally-defined recommendation for change
4) Motivate patient
a)   Inform of health and other benefits from the change
b)   Use knowledge of their personality
c)   Emphasize patient's capacity for change
d)   Underscore that help is available in you or others to whom you could refer
e)   Make point that past failures do not bode poorly
5) Check understanding and desire for change; if they desire change, proceed as follows
Obtain a commitment and patient's goals
1) Repeatedly reinforce commitment
2) Set specific behavioral goals
3) Set expectations for success
4) Reaffirm commitment in terms of patient's goals
Negotiate a specific plan
1) Obtain detailed understanding of the role of the behavior to be changed in the patient's life
2) Include patient actively in setting the plan, including sharing in decision making
3) Include medical interventions where applicable; e.g., nicotine patch
4) Check understanding and reaffirm plan
5) Set specific follow-up time

For patients who refuse, the precontemplation or contemplation phases, this is accepted with the indication that the provider will continue to explore the subject at subsequent visits.
[a] For more details, see references [31,41].

with from 2 to 15 items representing six variables: Agenda Setting; Physical Story; Personal Story; Emotional Story; Indirect Skills; General Skills. Previously published, Guetzkow's U ranged from 0.00 to 0.087; Cohen's kappa ranged from 0.86 to 1.00 for the six variables and 33 individual items; overall kappa was 0.90; overall percent agreement was 97.5%, ranging by item from 84 to 100% [37]. This coding method is linked to the only patient-centered interviewing method associated with improved patient health outcomes [27,28].

2) Informing and motivating (I&M) interviewing model (to stop smoking cigarettes) [39]; seen in the coding sheet in Table C1 in Appendix C, there were 28 yes/no items with from 3 to 9 items representing five variables: Educating, Informing, and Motivating; Commitment and Goals; Negotiate Plan; Patient-centered, Non-emotional Skills; Patient-centered, Emotional Skills. Previously published, Guetzkow's U ranged from 0.00 to 0.10; Cohen's kappa ranged from 0.73 to 0.87 for the five variables and 28 individual items; overall kappa was 0.84; overall percent agreement was 93%,

Table 4
Characteristics of Study Residents with Matched Pre- and Post-Tests.

	Intervention Group (N = 39)	Control Group (N = 32)	All Participants (N = 71)	P-value
Age in years (Mean and SD)	29.3 (4.3)	31.2 (3.5)	30.2 (4.1)	.052
Male (%)	22 (56%)	18 (56%)	40 (56%)	.989
U.S. graduates (%)	20 (51%)	13 (41%)	33 (46%)	.370
M.D. (%)	19 (49%)	32 (100%)	51 (72%)	<.001
Race (%)				
Asian	16 (41%)	16 (50%)	32 (45%)	.299
White	17 (44%)	12 (38%)	29 (41%)	
Black	0 (0%)	2 (6%)	2 (3%)	
Other	6 (15%)	2 (6%)	8 (11%)	
Married (%)	15 (38%)	14 (44%)	29 (41%)	.652

ranging by item from 82 to 100% [39]. This coding method is unique in including the key emotional and relational dimensions important to motivating patients to make health behavior changes.

4.3.3. Exploratory measures
1) The Interview Satisfaction Questionnaire had 12 items, each on a 5-point Likert scale, with a 4-factor structure, high reliability, and concurrent validity [38]. It evaluated standardized patients' satisfaction with a resident interaction.
2) The Resident Self-Efficacy Questionnaire had 27 items, each on a 5-point Likert scale. It evaluated residents' self-efficacy (confidence) in using the models for: the MHCM (14 items); patient-centered interviewing (5 items); and informing and motivating (8 items); it had Cronbach's alpha reliabilities, respectively, of 0.92, 0.88, and 0.91. (Unpublished and available from the authors upon request.)

4.4. Data collection

Data were collected in Michigan State University simulation centers in each city. Resident interviews with standardized patients (SP) were recorded digitally using one of the three endpoint models. Twelve SPs were trained and checked yearly for fidelity to their roles. All SPs worked in equal numbers at both sites. Several SPs were instructed in each of the three models, none deploying more than one. SPs also were instructed in how to complete satisfaction questionnaires following their interaction with a resident.

All pre-test data were collected yearly in late June or early July at the start of PGY1 from 2012 to 2015, and post-test data were collected in late May or early June of 2015 and 2016. The 5-year grant support concluded in September 2016, so that the final posttest evaluations occurred in May/June 2016. Faculty began training PGY1 residents in July 2012 (graduating class of 2015). This means that only the post-tests of the graduating classes of 2015 and 2016 occurred after all three years of residency. Therefore, proposed prior to study in the grant application, for the May/June 2016 posttests, we also included residents with two years of training (class of 2017) and one year of training (class of 2018). We did this to have greater numbers of residents for analysis, a conservative bias that works against our hypothesis. Further, given exigencies of 80-hour work weeks and high pressure patient care rotations, we were not able to get both pre- and post-test evaluations on some residents.

4.5. Statistical analysis

Only residents with both a pre-test and a post-test were included in the analysis. For comparing the pre-test and post-test scores for the intervention and control groups, we used Analysis of Variance. The 2 × 2 design had one between factor (intervention and control) and one within factor (matched pre- and post-test). This approach provides a test for main effects related to study group and change over time as well as the interaction effect, representing the consistency of changes in pre- and post-test scores between the control and intervention groups. Effect size (Eta^2) also was calculated as an index of the magnitude of differences in each comparison. The software used is SPSS Version 23, IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp.

5. Results

5.1. Research subjects

For the four classes in the intervention group, at 14 residents per class, there was a total of 56 residents, from whom we obtained 53 pre-tests (95%) and 43 post-tests (77%); there were 39 residents with both a pre-test and a post-test (70%). For the four classes in the control group, at 13 residents per class, there was a total of 52 residents, from whom we obtained 43 pre-tests (83%) and 39 post-tests (75%); there were 32 residents with both a pre-test and a post-test (62%). As expected for each group, about half the residents had completed all three years of residency.

For the combined intervention and control groups, there were 71 residents with matched pre-tests and post-tests—the *study group*. Table 4 demonstrates no significant differences between the intervention and control groups, except for the proportion of physicians with M.D. vs. D.O. degrees (p < .001): all of the control group were M.D. physicians (41% were U.S. graduates) whereas only 49% of the intervention group had M.D. degrees (51% were U.S. D.O. graduates). Detailed analyses demonstrated no meaningful impact of this difference on the reported outcomes, and the results are available from the authors.

5.2. Primary endpoint

In comparing the pre-test and post-test Mental Health Care Model scores for the intervention and control sites, there was a significant difference between the groups (F = 24.56, p < .001, Eta^2 = .27) and a significant increase in scores over time (F = 40.88, p < .001, Eta^2 = .38). In addition, there was a significant interaction effect between time and study site (F = 33.51, p < .001, Eta^2 = .34) indicating that the degree of change over time was not consistent between the two sites. The mean pre-test and post-test scores for the control group were 8.15 and 8.79 respectively, compared to 7.44 and 15.00 for the intervention group. See Fig. 2.

5.3. Secondary endpoints

In comparing the pre-test and post-test patient-centered interviewing model scores for the intervention and control sites,

significant effects were identified related to site (F = 46.88, p < .001, Eta^2 = .44) and change in pre-post-test scores (F = 23.49, p < .001, .28). In addition, there was a significant interaction effect (F = 44.95, p < .001, .42) indicating that changes in patient-centered interviewing scores were not consistent between the two sites. The mean pre-test and post-test scores for the control group were 3.32 and 2.32 respectively, compared to 4.13 and 10.34 for the intervention group. See Fig. 2.

For the informing and motivating interviewing model scores, a significant difference by site was identified (F = 12.21, p = .001, .17), but not pre-post test score change (F = 3.52, p = .065, Eta^2 = .06). As with the other outcomes, a significant interaction between site and time was found (F = 24.97, p < .001, .30). The change in mean scores from pre-test to post-test for the intervention group (8.75 vs 12.63) was in the expected direction unlike the change in scores for the control group (9.14 vs. 7.38). See Fig. 2.

5.4. Exploratory evaluation

No significant results by site or time were found for simulated patients' satisfaction related to the patient-centered model or the informing and motivating model. This likely results from a ceiling effect with mean scores greater than 3.8 on a five point scale for the patient-centered model and greater than 4.3 for the informing and motivating model. For the MHCM, a significant change in pre-test (Mean = 4.1) and post-test (Mean = 4.4) scores was identified (F = 4.06, p = .048). There were no significant differences by site or interaction effect. The high degree of patient satisfaction likely obscured other sources of variation. Measured separately for each of the three models, no significant site, time or interaction effects were identified for resident self-efficacy, again likely because of a ceiling effect. Ratings of self-efficacy were high: pre-test and post-test mean scores ranged from 3.7 to 4.2.

6. Discussion, conclusion, and practice implications

6.1. Discussion

We first intensively trained medical faculty in the Mental Health Care Model (MHCM) as well as in a patient-centered interviewing model and an informing and motivating model [26]. We demonstrated, next, that the newly skilled faculty effectively trained medical residents in an intensive mental health care curriculum focused on the same models. Compared to non-equivalent control residents, trained residents effectively learned our primary endpoint, the MHCM (p < .001), as well as both secondary endpoints: patient-centered interviewing (p < .001) and informing and motivating interviewing (p < .001).

The potential significance of this study is providing support for further developing a train-the-trainer approach to improve mental health education. With the latter now at an impasse because of insufficient numbers of psychiatrists and trained medical clinicians to train residents (and students), these data suggest one way to correct the problem. To train non-psychiatry faculty at interested medical institutions, for example, a skilled psychiatry, medical, and other faculty, probably funded for this purpose, could provide outreach training to local faculty. Much training would occur via internet technology and we estimate it would take about 2 years to achieve faculty competence in primary care mental health. Newly trained faculty would then be available to train their residents (and students)—indefinitely—a major step toward solving the mental health problem.

This outreach model has impressive credentials and precedence in the agricultural revolution of the 1940s where skilled teachers, federally sponsored, met farmers locally and taught them how better to grow corn. This solved a problem of equal gravity—third world starvation [47]. The present study demonstrates the potential of an outreach program for mental health care education as a way to correct our present educational impasse in mental health care training.

The long German experience provides evidence that intensive mental health care training incorporated into formal programs prior to entering practice can be beneficial [48]. In the U.S., family medicine spearheaded increasing interest in mental health training in residencies [49]. Building on these experiences and upon earlier major contributions from multidisciplinary pain clinics [50], consultation liaison psychiatry [51], and primary care [52,53], we sought here to take the next step by conducting a rigorous research evaluation of mental health care training for residents.

The study employed the most rigorous experimental design usually possible in medical education; while possible, it is difficult to randomize educational interventions [31]. The curriculum involved three models developed for medical clinicians [27,28,31], and they emphasize systematically, for the first time in psychiatry or medicine, the centrality of the clinician-patient relationship in mental health care [26,49]. Further, the MHCM focuses on the common physical symptom presentations of mental health problems in medical settings [54]; noted earlier, in the uncommon
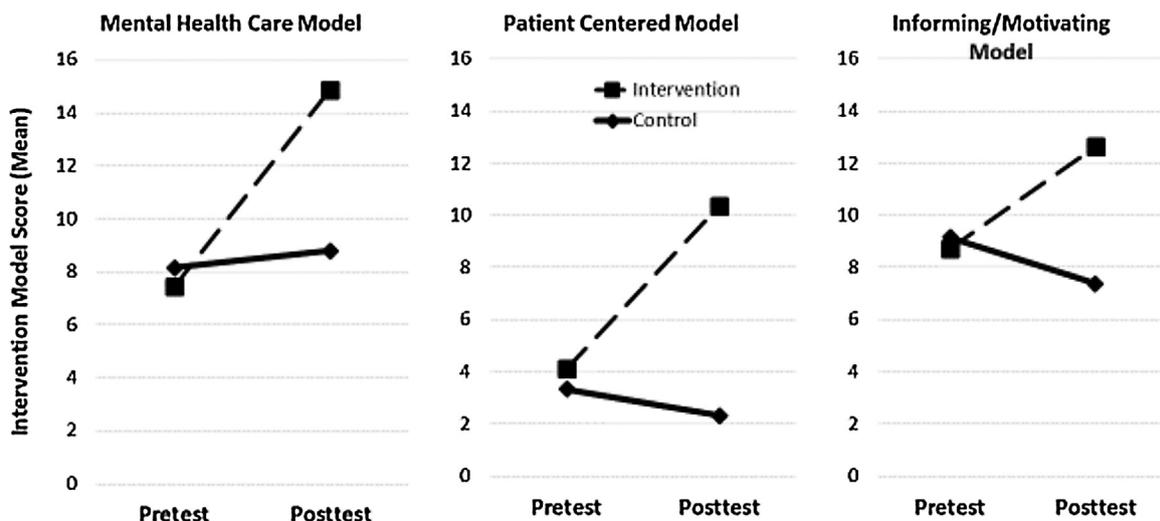

Fig. 2. Primary and Secondary Endpoints.

instances when physical symptoms are not present, one's job is easier, needing to address only the depression or other psychological symptoms [26]. Rather than try to transpose a psychiatry model, we thus have identified a model relevant to medical settings.

We expect many limitations in an initial study. In addition to requiring replication, future study should include real patients rather than simulated patients to demonstrate learning of the models, not only with residents but with students as well. Importantly, a wider range of medical faculty should be trained and evaluated. Another limitation is suggested by feedback that some faculty training in didactic material was unnecessary, so future study should determine if faculty training can be shortened to 12 months; i.e., further refine curriculum content. Overall, this new approach to mental health education needs considerable vetting in the above and multiple other respects. Further development of this train-the-trainer outreach model should focus on the educational perspective.

Not a limitation, in our opinion, but important to note, we have not demonstrated improved health outcomes from the training in models *already demonstrated to improve behavioral health outcomes* [27,28]. It is extraordinarily complex and expensive to demonstrate improved health outcomes from educational interventions, particularly when they are complex. We propose that improved patient outcomes should not be required before further developing the educational dimensions of this train-the-trainer program. Indeed, the Institute of Medicine recommended training in all years of education even before any evidence-based models were available and before Healthy People 2020's lamentation of worsening behavioral care [5,22]. This recommendation also is consistent with common sense (train the people who provide the care) and the guiding, systems-based theoretical model of medicine, the biopsychosocial model, which integrates behavioral disorders and disease care [55]. Indeed, when we develop other new curricular material to teach already evidence-based models, we do not insist on first linking them to patient outcomes; e.g., a new curriculum to teach evidence-based management of hypertension or diabetes. Of course, while continuing to advance teaching of behavioral care, we must devise creative ways to evaluate health outcomes.

6.2. Conclusion

We report a controlled study indicating the feasibility of using the Mental Health Care Model as the basis of a train-the-trainer intervention to improve residents' skills in mental health care. While this new direction requires more pedagogical development, it opens a new avenue for addressing the current impasse in mental health care education. Educational policy makers need research-based curricular information to guide a re-structuring of medical education in mental health that better aligns with societal needs [49,56,57].

6.3. Practice implications

While the models tested here can provide guidance in conducting mental health care, further development of the train-the-trainer program for preparing residents is needed.

Funding/support

Conflict of interest

The authors have no actual or potential conflict of interest, including any financial, personal, or other relationships, with other people or organizations within three years of beginning the submitted work that could inappropriately influence or be perceived to influence this work.

Acknowledgements

Appendix A

Table A1
Mental Health Care Model Coding Sheet.[a].

Educating/Informing—[ITEMS #3-4 COUNT AS YES ONLY IF PRECEDED BY YES IN EITHER ITEM #1 OR #2]
1. Determines patient's understanding/knowledge/ideas of problem or its cause (0 = No, 1 = Yes)
2. Identifies any mention of expectation of outcome or what should be done (0 = No, 1 = Yes)
3. Informs tests are negative or non-contributory or don't provide explanation for problem, no ominous or life-threatening conditions found ("nothing wrong" does not count) (0 = No, 1 = Yes)
4. Informs further testing or consultation or surgery not needed (0 = No, 1 = Yes)
Motivating
5. Indicates problem is 'real' or 'not in head' or not a 'psych case' (0 = No, 1 = Yes)
6. Gives name to what patient has *or* medical explanation of diagnosis (0 = No, 1 = Yes)
Treatment statements
7. Indicates a better treatment (physician specifically says that this is the best treatment, or is better than what patient was doing before) (0 = No, 1 = Yes)
8. Indicates depression is part of problem and needs to be treated (list of SSRI, SNRI, and other antidepressants provided) (0 = No, 1 = Yes)
9. Indicates narcotics make pain worse or otherwise don't work (see list of drugs) (0 = No, 1 = Yes)
10. Indicates narcotics need to be tapered or discontinued (0 = No, 1 = Yes)
11. Asks patient to summarize understanding (0 = No, 1 = Yes)
Commitment, Goals
12. Seeks patient's opinion/input/choice/commitment re. treatment (0 = No, 1 = Yes)
13. Indicates patient needs to be active participant and/or emphasizes capacity for change (0 = No, 1 = Yes)
Negotiate Treatment Plan
14. Asks present narcotic dose (good day v. bad day; actual nos. pills) and/or regularizes narcotic dose schedule (fixed schedule; contract) (0 = No, 1 = Yes)

15. Determines baseline physical activity/exercise (0 = No, 1 = Yes)
16. Mentions exercise program (e.g. walking, exercise, water aerobics) (0 = No, 1 = Yes)
17. Indicates importance of social life and/or mentions program of social activity (0 = No, 1 = Yes)
18. Mentions other aspects of treatment plan (meditation, relaxation, spouse visit, counseling, physical therapy, Osteopathic Manipulative Treatment (OMT)) (0 = No, 1 = Yes)
19. Does not advise inappropriate medications, or consultations (other than physical therapy or OMT) (0 = No, 1 = Yes)
Examples of <u>inappropriate tests</u>: x-ray, MRI, blood count
Examples of <u>inappropriate referrals</u>: Pain Clinic, Orthopedics, Neurosurgery, Physical Medicine, Sports Medicine.
Examples of <u>inappropriate medications</u>: benzodiazepines, muscle relaxants; does not increase dose of present narcotic or add a new narcotic – examples of drugs provided
20. Arranges explicit follow-up contact (within 1-3 weeks) (0 = No, 1 = Yes)
21. Summarizes treatment plan (0 = No, 1 = Yes)
Patient-centered Skills—Non-emotional
22. Sets agenda in first 5 minutes, such as asking if "anything else" or "other concerns" (0 = No, 1 = Yes)
23. Uses indirect skills: makes "impact on self" statement (0 = No, 1 = Yes)
24. Uses indirect skills: makes "impact on others" statement (0 = No, 1 = Yes)
25. Uses indirect skills: makes "self-disclosure" statement of resident about medical or other issues they might have had (0 = No, 1 = Yes)
Patient-centered Skills—Emotional
26. Asks about an emotion/concern/mood/stress; e.g., making you down, sounds like stress, see frustration in your face, you look concerned, what about the mood aspect, how deal with this, how coping – NOT what you think (0 = No, 1 = Yes)
27. Asks about an emotion/concern/mood/stress (0 = No, 1 = Yes) – INQUIRY ABOUT EMOTION IS SCORED TWICE WHEN ASKED TWICE OR MORE—IF #26 OR 27 IS YES, ONLY THEN CAN #28-33 BE COUNTED YES
28. Names an emotional reaction (0 = No, 1 = Yes)
29. Expresses understanding of any aspect of an emotion (0 = No, 1 = Yes)
30. Acknowledges plight or difficulty re. an emotional issue of any type (0 = No, 1 = Yes)
31. Praises anything re. their response to emotion (0 = No, 1 = Yes)
32. Expresses personal support in response to emotion (0 = No, 1 = Yes)
33. Notes others' support in response to emotion (0 = No, 1 = Yes)

Abbreviations: SSRI = selective serotonin uptake inhibitor; SNRI = selective norepinephrine reuptake inhibitor; OMT = osteopathic manipulative treatment; NURS = naming, understanding, respecting, supporting; MRI = magnetic resonance imaging.
  [a] See reference for further details [40]. A detailed coding manual is available from the authors.

Appendix B

Table B1
Patient–Centered Interviewing Model Coding Sheet.[a].

Setting the Agenda
 1 Uses own *and* patient's last name or other expressed preference (1 = No 2 = Yes)

 2 Indicates time available (1 = No 2 = Yes)

 3 Obtains agenda *and* inquires for additional items (1 = No 2 = Yes)

Physical Story
 4 The resident starts open-endedly focusing on physical agenda item (1 = No 2 = Yes)

 5 Addresses only physical issues volunteered by the patient (1 = No 2 = Yes)

Personal Story
 6 Keeps patient focused open-endedly on personal story(ies) to elaborate them (1 = No 2 = Yes)

 7 Addresses only personal topics volunteered by the patient (1 = No 2 = Yes)

 8 Encourages personal information open-endedly when patients do not volunteer it and patient remains focused on the physical story (1 = No 2 = Yes)

 9 Uses echoing to expand understanding of personal story (1 = No 2 = Yes)

10 Uses requests to expand understanding of personal story (1 = No 2 = Yes)

11 Uses summarizing to expand understanding of personal story (1 = No 2 = Yes)

Emotional Story
12 Keeps patient focused open-endedly on emotional story(ies) to elaborate them (1 = No 2 = Yes)

13 Addresses only emotional topics volunteered by the patient (1 = No 2 = Yes)

14 Inquires about emotions by using "how does that make you feel?" question (1 = No 2 = Yes)

15 Inquires about emotions by using other emotion seeking question (1 = No 2 = Yes)

16 Uses echoing to expand understanding of emotional story (1 = No 2 = Yes)

17 Uses requests to expand understanding of emotional story (1 = No 2 = Yes)

18 Uses summarizing to expand understanding of emotional story (1 = No 2 = Yes)

19 Uses "naming" statement in response to expression of emotion (1 = No 2 = Yes)

20 Uses specific "I understand" statement in response to expression of emotion (1 = No 2 = Yes)

21 Uses other understanding statements in response to expression of emotion (1 = No 2 = Yes)

22 Uses "praise" statement in response to expression of emotion (1 = No 2 = Yes)

23 Uses "acknowledge plight" statement in response to expression of emotion (1 = No 2 = Yes)

24 Uses "direct support [from interviewer]" statement in response to expression of emotion (1 = No 2 = Yes)

25 Uses "indirect support [from others]" statement in response to expression of emotion (1 = No 2 = Yes)

26 Uses "joining language" that indicates support to the patient in response to expression of emotion (1 = No 2 = Yes)

Indirect Patient-Centered Skills
27 Uses "impact on self" statement (1 = No 2 = Yes)

28 Uses "impact on others" statement (1 = No 2 = Yes)

29 Uses "beliefs/attributions" statement (1 = No 2 = Yes)

30 Uses "self-disclosure" statement (1 = No 2 = Yes)

General Skills
31 Indicates change in direction of questioning at end of interview to disease focus (1 = No 2 = Yes)

32 Interruptions are appropriate or nonexistent (1 = No 2 = Yes)

33 Resident determines content and direction of interview (1 = No 2 = Yes)

---

a For more details, see references [37]. A detailed coding manual is available from the authors.

Appendix C

Table C1
Informing and Motivating Model Coding Sheet.[a].

Educating/Informing/Motivating
 1 Determines patient's understanding of importance of quitting (0=No, 1=Yes)

 2 Informs patient of harmful outcomes from smoking – can be Yes only if #1 is Yes (0=No, 1=Yes)

 3 Motivates by discussing capacity for change or that past failures do not bode poorly (0=No, 1=Yes)

Commitment and Goals
 4 Determines readiness and/or commitment (0=No, 1=Yes)

 5 Asks patient to summarize decision to stop (0=No, 1=Yes)

 6 Asks for long-term goals (0=No, 1=Yes)

Negotiate Plan
 7 Asks choice of treatment at some point, or gives patient option to think about different treatments option (0=No, 1=Yes)

 8 Applies some specific time element (*one month or less) to quitting or tapering (0=No, 1=Yes)

 9 Suggests changes in specific smoking behaviors (0=No, 1=Yes)

10 Mentions medications: buproprion; nicotine replacement (gum; patch); varenicline; other (0=No, 1=Yes)

11 Mentions group work, exercise program, relaxation program, or other types of treatment (such as psychotherapy) (0=No, 1=Yes)

12 Arranges for an explicit contact in future, usually a follow-up visit, regarding cigarette cessation (0=No, 1=Yes)

13 Summarizes treatment plan (patient or doctor) (0=No, 1=Yes)

Patient-centered Non-Emotion Related Skills (at start, middle, end)
14 Sets agenda in first 5 minutes, such as asking if there is "anything else" (0=No, 1=Yes)

15 Open-ended beginning on items raised (0=No, 1=Yes)

16 Uses open-ended skills to elicit personal issues around smoking or other personal, non-emotional, issues: Echoing (0=No, 1=Yes)

17 Uses open-ended skills to elicit personal issues around smoking or other personal, non-emotional, issues: Requests (0=No, 1=Yes)

18 Uses open-ended skills to elicit personal issues around smoking or other personal, non-emotional, issues: Summarizes (0=No, 1=Yes)

19 Uses indirect skills: "impact on self" statement (0=No, 1=Yes)

20 Uses indirect skills: "impact on others" statement (0=No, 1=Yes)

21 Uses indirect skills: "beliefs/attributions" statement (0=No, 1=Yes)

22 Uses indirect skills: "self-disclosure" statement (0=No, 1=Yes)

Patient-centered Emotion Related Skills
23 Asks "How does that make you feel?" type question (0=No, 1=Yes)

24 Names an emotion (any mention of any emotion counts here) – can be Yes only if #23 is Yes (0=No, 1=Yes)

25 Expresses understanding of difficulty stopping or of an emotion (0=No, 1=Yes)

26 Acknowledges difficulty with treatment or of plight related to emotional problem (0=No, 1=Yes)

27 Praises interest in smoking cessation problem or response to emotion (0=No, 1=Yes)

28 Discusses support from any source (0=No, 1=Yes)

---

[a] For more details, see references [39]. A detailed coding manual is available from the authors.

References

[1] Norquist G.S., Regier DA. The epidemiology of psychiatric disorders and the de facto mental health care system. Annu. Rev. Med. 1996;47:473–9.

[2] Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Arch. Gen. Psychiatry 2005;62:593–602.

[3] Services USDoHaH, editor. Department of Health and Human Services: Healthy People 2010: Understanding and Improving Health. 2nd ed. Washington, D.C: U.S. Government Printing Office; 2000. p. 76.

[4] Dept. of Health and Human Services: Mental Health and Mental Disorders Healthy People 2010. Washington, D.C: U. S. Government Printing Office; 2000 18-13 to 18-32.

[5] Department of Health and Human Services: Healthy People 2020: The Road Ahead. Washington, DC 20211: US Governmant Printing Office; 2011 2011.

[6] Hogan MF. The President's New Freedom Commission: recommendations to transform mental health care in America. Psychiatr. Serv. 2003;54(11):1467–74.

[7] SurgeonGeneral: The Surgeon General's Report on Mental Health Washington, DC: The Surgeon General. 1999.

[8] Services UDoHaH, editor. Facing Addiction in America – The Surgeon General's Report on Alcohol, Drugs, and Health. [190_TD$DIFF]Washington, DC: [189_TD$DIFF]Department of Health and Human Services; 2016.

[9] Wang PS, Lane M, Olfson M, Pincus HA, Wells KB, Kessler RC. Twelve-month use of mental health services in the United States—results from the national comorbidity survey replication. Arch. Gen. Psychiatry 2005;62:629–40.

[10] Cunningham PJ. Beyond parity: primary care physicians' perspectives on access to mental health care. Health Aff. (Millwood) 2009;28(3):w490–501.

[11] Morrisey J, Thomas K, Ellis A, Konrad T. Development of a New Method for Designation of Mental Health Professional Shortage Areas. Chapel Hill, NC: University of North Carolina at Chapel Hill; 2007.

[12] Wang P, Demler O, Olfson M, Pincus HA, Wells KB, Kessler R. Changing profiles of service sectors used for mental health care in the United States. Am. J. Psychiatry 2006;163:1187–98.

[13] Melek S, Norris D. Chronic conditions and comorbid psychological disorders. Millman Research Report. Seattle, WA: Millman; 2008. p. 19.

[14] Leigh H, Stewart D, Mallios R. Mental health and psychiatry training in primary care residency programs. Part I. Who teaches, where, when and how satisfied? Gen. Hosp. Psychiatry 2006;28(3):189–94.

[15] Smith RC. Educating trainees about common mental health problems in primary care: a (Not so) modest proposal. Acad. Med. 2011;86:e16.

[16] Association of American Medical Colleges: Basic Science, Foundational Knowledge, and Pre-clerkship Content—Average Number of Hours for Instruction/Assessment of Curriculum Subjects. Association of American Medical Colleges; 2012.

[17] Leigh H, Mallios R, Stewart D. Teaching psychiatry in primary care residencies: do training directors of primary care and psychiatry see eye to eye? Acad. Psychiatry 2008;32(6):504–9.

[18] Rost K, Nutting P, Smith J, Coyne JC, Cooper-Patrick L, Rubenstein L. The role of competing demands in the treatment provided primary care patients with major depression. Arch. Fam. Med. 2000;9:150–4.

[19] Huffman JC, Niazi SK, Rundell JR, Sharpe M, Katon WJ. Essential articles on collaborative care models for the treatment of psychiatric disorders in medical settings: a publication by the academy of psychosomatic medicine research and evidence-based practice committee. Psychosomatics 2014;55(2):109–22.

[20] Roy-Byrne P. Collaborative care at the crossroads. Br. J. Psychiatry 2013;203(2):86–7.

[21] Koh HK, Blakey CR, Roper AY. Healthy people 2020: a report card on the health of the nation. JAMA: J. Am. Med. Assoc. 2014.

[22] Institute of Medicine: Improving Medical Education: Enhancing the Behavioral and Social Science Content of Medical School Curricula. Washington, DC: National Academy of Sciences; 2004.

[23] Crabb J, Barber L, Masson N. Shrink rethink: rebranding psychiatry. Br. J. Psychiatry 2017;211(5):259–61.

[24] Olfson M. Building the mental health workforce capacity needed to treat adults with serious mental illnesses. Health Aff. (Millwood) 2016;35(6):983–90.

[25] Bishop TF, Seirup JK, Pincus HA, Ross JS. Population of US practicing psychiatrists declined, 2003-13, which may help explain poor access to mental health care. Health Aff. (Millwood) 2016;35(7):1271–7.

[26] Smith R, Laird-Fick H, D'Mello D, Dwamena F, Romain A, Olson J, Kent K, Blackman K, Solomon D, Spoolstra M, et al. Addressing mental health issues in primary care: an initial curriculum for medical residents. Patient Educ. Couns. 2014;94:33–42.

[27] Smith RC, Lyles JS, Gardiner JC, Sirbu C, Hodges A, Collins C, Dwamena FC, Lein C, Given CW, Given B, et al. Primary care clinicians treat patients with medically unexplained symptoms—a randomized controlled trial. J. Gen. Intern. Med. 2006;21:671–7 PMCID: PMC1924714.

[28] Smith R, Gardiner J, Luo Z, Schooley S, Lamerato L. Primary care physicians treat somatization. J. Gen. Int. Med. 2009;24:829–32.

[29] Lyles JS, Hodges A, Collins C, Lein C, Given CW, Given B, D'Mello D, Osborn GG, Goddeeris J, Gardiner JC, et al. Using nurse practitioners to implement an intervention in primary care for high utilizing patients with medically unexplained symptoms. Gen. Hosp. Psychiatry 2003;25:63–73 PMCID: PMC1892768.

[30] Smith RC, Gardiner JC, Lyles JS, Sirbu C, Dwamena FC, Hodges A, Collins C, Lein C, Given CW, Given B, et al. Exploration of DSM-IV criteria in primary care patients with medically unexplained symptoms. Psychosom. Med. 2005;67(1):123–9.

[31] Smith RC, Lyles JS, Mettler J, Stoffelmayr BE, Van Egeren LF, Marshall AM, Gardiner JC, Maduschke KM, Stanley JM, Osborn GG, et al. The effectiveness of intensive training for residents in interviewing. A randomized, controlled study. Ann. Intern. Med. 1998;128:118–26.

[32] Miller W, Rollnick S. Motivational Interviewing—Helping People Change. 3rd ed. New York: The Guilford Press; 2013.

[33] Engel GL. The need for a new medical model: a challenge for biomedicine. Science 1977;196:129–36.

[34] Bandura A. Social cognitive theory: an agentic perspective. Annu. Rev. Psychol. 2001;52:1–26.

[35] Hodges BD, Kuper A. Theory and practice in the design and conduct of graduate medical education. Acad. Med. 2012;87(1):25–33.

[36] Kern DE, Thomas PA, Hughes MT. Curriculum Development for Medical Education—A Six-step Approach. Baltimore, MD: The Johns Hopkins University Press; 2009.

[37] Grayson-Sneed K, Smith S, Smith R. A research coding method for the basic patient-centered interview. Patient Educ. Couns. 2016;100:518–25.

[38] Grayson-Sneed K, Dwamena F, Smith S, Laird-Fick H, Freilich L, Smith R. A questionnaire identifying four key components of patient satisfaction with physician communication. Patient Educ. Couns. 2016;99:1054–61.

[39] Grayson-Sneed K, Smith R. A research coding method to evaluate clinicians' skills in promoting smoking cessation. Patient Educ. Couns. 2018;101:541–5.

[40] Grayson-Sneed K, Smith R. A research coding method to evaluate medical clinicians conduct of behavioral health care. Patient Educ. Couns. 2018;101:743–9.

[41] Fortin VI, AH, Dwamena F, Frankel R, Lepisto B, Smith R. Smith's Patient-centered Interviewing—An Evidence-based Method. 4th ed. New York: McGraw-Hill, Lange Series; 2018.

[42] Smith RC, Lein C, Collins C, Lyles JS, Given B, Dwamena FC, Coffey J, Hodges A, Gardiner JC, Goddeeris J, et al. Treating patients with medically unexplained symptoms in primary care. J. Gen. Intern. Med. 2003;18:478–89 PMCID: PMC1494880.

[43] Lyles J, Dwamena F, Lein C, Smith R. Evidence-based patient-centered interviewing. JCOM 2001;8:28–34.

[44] Luo Z, Goddeeris J, Gardiner J, Lyles J, Smith RC. Costs of an intervention for primary care patients with medically unexplained symptoms—A randomized controlled trial. Psychiatr. Serv. 2007;58:1079–86 NIHMSID: PMCID: PMC2633637.

[45] Dwamena F, Laird-Fick H, Freilich L, D'Mello D, Frey J, Dasari A, Grayson-Sneed K, Solomon D, Smith RC. Behavioral health problems in medical patients. J. Clin. Outcomes Manage. 2014;21:497–505.

[46] Smith RC, Dwamena FC, Fortin AH. Teaching personal awareness. J. Gen. Intern. Med. 2005;20:201–7.

[47] Rogers E. Diffusion of Innovations. 5th edn. New York: Free Press; 2003.

[48] Hafner S, Petzold E-R. The role of primary care practitioners in psychosocial care in Germany. Perm. J. 2007;11:52–5.

[49] World Organization of Family Doctors: Companion to Primary Care Mental Health. New York: Wonca (World Organization of Family Doctors) and Radcliffe Publishing; 2012.

[50] Kashner TM, Rost K, Cohen B, Anderson MA, Smith [197_TD$DIFF]Jr GR. Enhancing the health of somatization disorder patients: effectiveness of short term group therapy. Psychosomatics 1995;36:462–70.

[51] Lin EH, Katon WJ, Simon GE, Von Korff M, Bush TM, Rutter CM, Saunders KW, Walker EA. Achieving guidelines for the treatment of depression in primary care: is physician education enough? Med. Care 1997;35(8):831–42.

[52] Bower P, Gilbody S. Managing common mental health disorders in primary care: conceptual models and evidence base. BMJ 2005;330(7495):839–42.

[53] Kroenke K, Taylor-Vaisey A, Dietrich AJ, Oxman TE. Interventions to improve provider diagnosis and treatment in mental disorders in primary care—a critical review of the literature. Psychosomatics 2000;41:39–52.

[54] Kroenke K. The interface between physical and psychological symptoms. Prim. Care Compan. J. Clin. Psychiatry 2003;5(Suppl. (7)):11–8.

[55] Smith R, Fortin AH, Dwamena F, Frankel R. An evidence-based patient-centered method makes the biopsychosocial model scientific. Patient Educ. Couns. 2013;90:265–70.

[56] Berwick DM, Finkelstein JA. Preparing medical students for the continual improvement of health and health care: abraham Flexner and the new "public interest". Acad. Med. 2010;85(Suppl (9)):S56–65.

[57] Skochelak SE. A decade of reports calling for change in medical education: what do they say? Acad. Med. 2010;85(Suppl (9)):S26–33.