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Factors associated with the management of Sexually transmitted infections (STIs) and sexual dysfunctions (SDs): A survey of Iranian-American Physicians in California

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ABSTRACT

Introduction. Knowledge on effective management strategy for sexual healthcare (i.e., sexual history taking, sexually transmitted infections, sexual dysfunctions) used by Iranian-American physicians remains a serious gap within current literature. Having this knowledge, and its impact on their patients, is essential, since discussions of sexually related topics are taboo in Iranian societies. Aim. We examined the Iranian-American physicians' sexual healthcare management offered to their patients, within the context of the barriers, and the attitudes, inhibiting the discussion and provision of sexual healthcare. Methods. A self- administrated questionnaire was designed. 1,550 survey instruments were sent to Iranian-American physicians practicing in California. Factor analysis performed to detect relationships between correlated variables within the data. Results. 348 questionnaires (23% response rate) were returned. Four factors related to the effectiveness of sexual health care management were identified, which were internally consistent (a range of Cronbach's alpha=0.89 to 0.94). Factors: (1) female sexual dysfunction, (2) history of sexual intercourse, (3) STI, and knowledge of disease, (4) male sexual dysfunction. Significant associations were found between variables: clinical specialty, religious affiliation, age, gender, and place of graduation. Conclusion. Results show all four factors may significantly impact the effectiveness of sexual health care management by Iranian-American physicians which can potentially influence quality of sexual healthcare for patients. Additional studies from this population and other subpopulations of US physicians are needed to design new strategies that reflect on physicians' management on sexual healthcare delivery. If confirmed in other studies, our findings could have implications for training of medical graduates globally.

Key Words: Iranian-American Physicians; Management of Sexual Health Care; Culture; STIs; Sexual Dysfunctions

INTRODUCTION

Sexual Dysfunctions (SDs), Sexually Transmitted Infections (STIs) and Sexually Transmitted Diseases (STDs) are important areas of sexual healthcare and public health concern [1, 2, 3, 4, 5] There is a strong association between STIs and SDs, and SDs may raise patients' risk of STI

acquisition and sexual difficulties [6] Addressing sexual concerns, and related treatments when STIs are diagnosed, are essential to sexual healthcare [1]. However, in the US, regardless of the prevalence of these diseases [7], and despite published guidelines for specifying appropriate treatments by the Center for Disease Control and prevention (CDC) [8], the majority of physicians of the mainstream and/or sub-populations, do not follow these guidelines as part of STIs and SD management [9]. Despite the importance of risk screening, less than one-third of physicians routinely screen patients for STIs [10] (St Lawrence et al. 2002) due to communication challenges, level of comfort, and/or lack of training in sexual health care [11]. Additional challenges include the barriers [12], and cultural attitudes [13] among physicians from various subpopulations or with diverse cultural backgrounds, such as Iranian-American physicians, where discussion of sexuality is considered a significant taboo.

The latest report released by the CDC suggests that nearly 2.3 million cases of chlamydia, gonorrhea, and syphilis were diagnosed in the United States in 2017 [14]. Gonorrhea diagnoses increased 67 percent overall, and nearly doubled among men. Primary and secondary syphilis diagnoses increased 76 percent. Gay, bisexual and other men who have sex with men (MSM) made up almost 70 percent of primary and secondary syphilis cases. Prior reports indicated that more than 1.7 million cases of Chlamydia were diagnosed in 2016, with 45 percent among 15- to 24-year-old females [8]. The current CDC analysis of STD cases in the US, surpassed the previous record where the total combined STI cases of chlamydia (5.9 %), gonorrhea (12.8 %), and syphilis (19 %) reported in 2015-2016 reached the highest number ever [8]. Young people (ages 15-24) accounted for nearly two-thirds of chlamydia diagnoses, and half of gonorrhea diagnoses. Gay and bisexual men accounted for the majority of new gonorrhea and syphilis cases (82% of male cases with known gender of sex partner). The rate of reported congenital syphilis has increased each year during 2015–2016 (37.5%) and during 2012–2016 (111.1%) among women, and there continues to be increases in syphilis among newborns by 6% during this time period [15]. An effective national response to the STI epidemic requires engagement, primarily from physicians, by making STI screening a standard part of medical care, not only among younger adults, but also including pregnant women, and older adults [16]. Equally important are the prevalence of SDs that are as high as 35% for men and 55% for women in the US [17, 6]. SDs have either organic or psychogenic etiologies, or both [18, 19, 20]. Other studies indicate that STIs are associated with SDs, and all women with known diseases are recommended to have an SD screening [21, 22]. However, only as few as 9% of health care providers in the US ever ask their STI positive female patients about sexual functioning [23, 24, 25, 26, 27].

SDs are often endured in silence, and only 11% of men and 30% of women seek treatment [21, 28, 29]. The extent of this inhibition needs to be looked at from a wider perspective, because there are direct physical and psychological effects of STIs and SDs [30]. Chronic prostatitis has been associated with STIs [31]and with premature ejaculation and erectile dysfunction which can also impact relationships, self-esteem, and self-worth [32, 33]. Chlamydial infection results in feelings of stigmatization, guilt, regret, and feelings of awkwardness in men [34]. Genital herpes is associated with psychiatric illness [35, 36, 37] and SDs [38]. Genital warts caused as a result of HPV, are believed to be associated with sexual dysfunction, and can result in both anxiety and depression. Both of these conditions may have associations with diminished sensation, and less attractiveness in the affected area [39]. These can ultimately have a negative impact on patients' quality of life, and level of sexual functioning [40, 41]. Some STIs can cause sores that increase the risk of HIV transmission [42]. In the US, HIV patients often suffer from psychiatric disorders such as depression and anxiety after they are diagnosed [43,44, 42, 45]. The most common forms of anxiety may include, adjustment disorder, panic

disorder and agoraphobia, social phobia and other phobias, obsessive compulsive disorder (OCD), post-traumatic stress disorder (PTSD), generalized anxiety disorder (GAD), and acute stress disorder, due to a general medical condition [46].

One factor associated with high-risk sexual behaviors and STIs among youth in the US is depression [47, 48, 49, 50, 51, 52]. Depression also may increase vulnerability to risk behaviors and infection due to cognitive and psychosocial impairment [53,54,55,56], reduce motivation [54], and increase fatalism [57]. In primary care, physicians miss between one half to two-thirds of patients having such depression related symptoms [58] as patient adjusting and adapting to life with a chronic, life-threatening illness [43, 36]. There are reports linking SDs with Human Papilloma virus (HPV) among men and women [59]. HPV may cause benign skin and mucosal tumors (genital, anal, or oral warts), intraepithelial neoplasia, and/or malignant cancers in different organs [40]. HPVs effect on women mostly manifest itself at the genital site on the uterine cervix [41].

The benefits of early engagement by taking a sexual history of SDs and STIs include improved individual patient survival [60, 61]. Despite the education that is available to the public about STIs and SDs, the pervasive increase in these conditions may suggest that patients are not approaching physicians due to social reasons. Similar concepts of psychosocial expectations and limitations can also limit physicians from having an effective management approach that starts with effective communication to their patients. Research reports that physicians' culture and related biases may limit a physician's proactivity to sexual health care [62].

It is estimated that at least 7,000 Iranian-American physicians are practicing in California [63] and studies suggests that these physicians find it difficult to talk about sexual issues with their patients [12, 13]. Such discussions of sexually related topics are taboo from the Iranians' cultural perspective [64, 65, 66, 12,13]. However, being aware of ones' cultural biases that can interfere with the management of sexual health care, is essential [67].

Aims

To our knowledge, this is the first study that specifically addresses Iranian-American physicians' sexual history taking, as a part of sexual health care management strategy, in the United States. This study focuses on the impact of cultural barriers [12], and attitudes [13], on the management of sexual health care (SDs and STIs) among this population.

METHODS

Study Design

Our study was a descriptive cross-sectional survey of Iranian–American physicians practicing in California in specialties that include sexual health care. We assessed and determined factors associated with these physicians' sexual health care management. For the purpose of our study, management of sexual health care includes sexual history taking in relation to SDs and STIs.

Study Subjects

A total of 1550 male and female Iranian-American physicians in California were identified from among 7,000 practicing in California, for inclusion in our study. Inclusion criteria included Iranian–American physicians who were currently practicing in California in one of the specialties that would possibly offer sexual health care to their patients (i.e., Family Physicians, Gynaecologists, Cardiologists, Internists, Urologists, Pediatricians (youth care), Dermatologist/venerologist, Psychiatrists, Geriatrics) All other identified Iranian-American physicians practicing outside California, or in other practice specialties than the ones identified for our study, were excluded. The process of identifying potential physicians included

collecting names and addresses across California, using public information [12] (Rashidian et al. 2016). Based on this, we identified 1,550 of approximately 7,000 Iranian–American physicians in California who met the inclusion criteria, and these constituted our target study population for the survey. As there is no formal power analysis for factor analysis [68], we attempted to survey the full sample of the 1550 [69, 70] healthcare practitioners (Table 1).

Questionnaire Development

Using the standardized surveys on sexual health care (CAPS), we specifically designed a 45-item structured self-administered questionnaire for our study [12, 13]. This questionnaire was used to collect information related to factors impacting the management of sexual health care among our participants. Based on a review of sexual healthcare literature [71], four sections and subsequent sub-sections were used for the questionnaire: Section I: Sexual health care; Section II: Sexual health training; Section III: Patient profile; and Section IV: Physician background information. For this article, we used information from Sections I: Question 4 (25 items), Question 11 (5 items), Question 13 (2 items); Section III: Question 20 (5 items), Question 21 (4 items). Section IV: Question 27-34 (See Appendix).

Validity and Reliability

To assure validity and reliability of the survey, we utilized three methods: (a) a panel of five expert physicians, highly skilled in research and teaching in public health and cultural diversity in health care, all of whom were involved with delivering sexual health care to patients, were invited to validate the questionnaire. They found most of the initial 34-item questionnaire items appropriate and relevant to the study, with the Content Validity Index equal to 0.90 [72]; (b) the questionnaire was then reviewed by an independent group of expert researchers for opinions on the questionnaire's content validity and face validity; and (c) a pilot study was then conducted among selected physicians to test the comprehensibility of the items, and to establish the reliability of the questionnaire. The overall Cronbach's α [73] of the pilot study was calculated to be 0.9, indicating that the instrument has a high level of internal consistency. The pilot testing resulted in further refinement of the questionnaire.

Ethical Considerations

Ethical approval was obtained from the Human Research Ethics Committee of the University of New England, Australia and verified by the Institutional Review Board (IRB) at Loma Linda University, USA. Participation was voluntary, and no incentive was provided. Physicians' response to the questionnaire served as their consent to participate. Questionnaires were anonymous, and individual physicians could not be identified by the researchers. The primary researcher is in possession of all returned questionnaires.

Data Collection

The self-administered questionnaire was mailed to the 1,550 selected Iranian-American physicians in California, with a cover letter explaining the study, and requesting their participation. A self-addressed and self-stamped return envelope was included in the mailing. In order to increase the response rate, a total of three contact attempts were made with the target participants. Four weeks after the initial mailing, all 1,550 physicians received a replacement packet similar to the first one, which included a thank you letter. A week after the second contact, reminder phone calls were made to a random 50% sample of the 1,550 physicians in our target study population. The timeframe to receive the questionnaire and responses was 30-45 days, and data collection took place during May – August of 2013.

Statistical Analysis

The collected data was entered into Excel 2010 (Microsoft Corporation, Redmond, WA, USA) and data were analyzed using SPSS 22 (SPSS Inc., Chicago, IL, USA) and SAS 9.4 (SAS Institute, Cary, NC, USA). The statistical analyses included descriptive statistics, exploratory factor analysis, correlation, two sample t-tests, Chi-square for contingency tables, regression and ANOVA. The exploratory factor analysis employed a principal component approach (PCA) with Varimax rotation. Question 4 with all 25 items in section I, "Obtaining Sexual History", were utilized for this article. The factor analysis identified four meaningful factors: Factor 1: Female Sexual Dysfunction; Factor 2: History of Sexual Intercourse; Factor 3: STI and Knowledge of Disease; and Factor 4: Male Sexual Dysfunction (Table2), based on the eigenvalues (the amount of variance accounted for by each factor), and scree plot test [74]. Items loading at ≥0.5 were retained for factor clarification and conceptual description. This choice in general is subjective, although the guideline was based on the literature [75] as follows: range ≥0.30–0.47 is graded as weak, 0.48–0.60 graded as moderate, and >0.60 is considered strong. We checked the internal consistency via Cronbach's alpha as a measure of reliability statistics [73]. The Cronbach's alpha reliability coefficient normally ranges between 0 and 1, and 0.7 is considered an acceptable reliability coefficient [76]. The following rules of thumb applies: "_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and_ < .5 – Unacceptable" [77].

For appropriateness of factor analysis, we used the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity

RESULTS

Of the 1,550 surveys mailed out, a total of 354 physicians returned a completed questionnaire for a response rate of 23%. Of these, 57% were males and two-thirds were younger than 60 years of age. Most (more than 80%) of physicians were born in Iran, and of these about 65% received their education in Iran (Table 1). The majority of physicians (54.4%) were Muslims with the rest being mostly Jewish (21.8%), missing (5.7%), and others (18.1%).

Table 1 **Physicians' Characteristics, N=354 (?)**	*n* (%)
Gender	
Male	203 (57.3%)
Female	132 (37.3%)
Missing	19 (5.4%)
Age	
30 – 39 years	36 (10.2%)
40 – 49 years	110 (31.1%)
50 – 59 years	71 (20.1%)
60 – 69 years	97 (27.4%)
70 – 89 years	15 (4.2%)
Missing	24 (7.1%)
Place of Birth	
Iran	291 (82.2%)
Other	35 (9.9%)
Missing	28 (7.9%)
Country of Medical Education	
Iran	190 (53.8%)
USA	130 (36.8%)
Other	8 (2.3%)
Missing	25 (7.1%)
Location of Medical Practice	
Suburban	175 (49.6%)
Urban	138 (39.1%)
Rural	20 (5.7%)
Missing	20 (5.7%)
Religion of Physician	
Muslim	192 (54.4%)
Jewish	77 (21.8%)
Other	64 (18.1%)
Missing	20 (5.7%)
Clinical Specialty of Physician	
Family practitioner	62 (17.5%)
Internist/cardiologists	56 (15.8%)

Obstetrician/gynaecologist	53 (15%)
Pediatrician (youth care)	30 (8.5%)
Urologist	30 (8.5%)
Dermatologist/venerologist	23 (6.5%)
Gastrologist	18 (5.1%)
Psychiatrist	18 (5.1%)
Other	15 (4.2%)
Geriatrics	11 (3.1%)
Plastic surgeon	11 (3.1%)
Missing	18 (7.6%)

Factor analysis was conducted with responses on a 5-level Likert scale (1 – I never ask, 2 – I avoid it even if the patient brings it up, 3 – I respond only if the patient brings it up, 4 – I sometimes ask, 5 – I always ask) to 25 items that pertained to the physicians' measure of management when obtaining a sexual history. The KMO statistic for this data is 0.92 which is considered excellent. Considering factors with eigenvalues larger than one and scree plot, our four factors accounting for a total of 74% of the variability were selected. Internal consistency, as assessed by Cronbach's alpha, was 0.94 for Factor 1 (Female sexual dysfunction (α = .938)), 0.93 for Factor 2 (History of sexual intercourse (α = .933), 0.89 for Factor 3 (STI and knowledge of disease (α = .892), and 0.90 for Factor 4 (Male sexual dysfunction (α = .901). Thus, all four were 0.89 or higher and therefore considered good or excellent [73], (Table 2).

Table 2

Factor loading values along with Cronbach's Alpha

	F1	F2	F3	F4	%Var*	Mean (SD**)
Factor 1: Female sexual dysfunction (α = .938)						
Q13: Female patient level of sexual desire or interest	.831				51.9	2.65 (1.09)
Q14: Female patient satisfaction with her level of arousal before intercourse	.824					2.41 (1.12)
Q15: Female patient ability to reach orgasm during sexual activity	.815					2.49 (1.09)
Q12: Satisfaction of female patient with her overall sex life	.769					2.65 (1.07)
Q18:A masturbatory history in women, which is use for gaining evidence of persisting libido	.764					2.40 (1.12)
Q16: Female patient experience of pain or discomfort during or following vaginal penetration	.678					2.84 (1.13)
Q19:Consider sensitivity of terms with which the patient may feel uncomfortable with	.649					2.96 (1.18)
Q17:Female patient level of sexual education	.585					2.77 (1.15)
Factor 2 :History of sexual intercourse (α = .933)						
Q03:Sexual orientation of the patient		.811			11.3	2.87 (1.23)
Q25:Having intercourse with more than one partner		.793				2.74 (1.34)
Q05:Types of sexual practices		.790				2.67 (1.24)
Q04:The age at first intercourse		.790				2.79 (1.33)
Q22:History of sexual abuse		.765				2.84 (1.21)
Q06:Last sexual intercourse		.666				2.87 (1.34)
Q23:Frequency of sexual intercourse		.596				2.89 (1.21)
Q07:Sexual partner assessment by the patient		.571				2.55 (1.15)
Factor 3: STI and knowledge of disease(α = .892)						
Q02:Patient's presentation of symptoms			.793		6.2	3.70 (1.32)
Q20:STI prevention practices and symptoms			.782			3.64 (1.18)
Q01:Reproductive care and information (including birth control)			.765			3.63 (1.42)
Q21:History of prior STIs			.715			3.74 (1.10)
Q24:Knowledge of patients possess about STIs			.605			3.39 (1.08)
Factor 4: Male sexual dysfunction (α = .901)						
Q09:A decrease in the freq. of coitus, which may increase severity of premature ejaculation				.821	4.7	2.62 (1.15)
Q11:Obtaining masturbatory history in men, which may be used to give evidence of persisting libido				.773		2.37 (1.20)
Q10: A period of separation from a sex partner, which may increase severity of premature ejaculation				.721		2.67 (1.21)
Q08:Problems related to sexual intercourse				.501		3.02 (1.12)

Notes:
Var* = Percentage of variability explain by Factors
SD** = Standard Deviation

Factor 1 (Female Sexual Dysfunctions), included eight items that accounted for 51.9 % of the explained total variance (eigenvalue of 12.98) from the 25 variables. The female sexual desire variable (Table 2), has the highest loading factor, while the female level of sexual education

variable has the lowest loading factor (Table 2). Factor 2 (History of Sexual Intercourse), included eight variables and accounted for 11.32% of the explained total variance (eigenvalue of 2.83). Sexual orientation has the highest loading factor, while sexual partner assessment by the patient has the lowest. Factor 3 (STI and Knowledge of Diseases) consisted of five variables and accounted for 6.16% of the explained total variance (eigenvalue of 1.54) with strong loading on patient presentation of the symptom, and the lowest on knowledge of patient about STIs. Factor 4 (Male Sexual Dysfunctions) consisted of four variables and accounted for 4.66% of the explained total variance (eigenvalue of 1.17), which included the highest loading on decrease in frequency of coitus and the lowest on problem with sexual intercourse. As shown in Table 2 (last column), the majority of mean scores (range 1-5) are below 3.0, which indicates physicians are not voluntarily making sexual history inquiries, but rely on their patients to bring up conversations about their symptoms. However, for Factor 3 the average is greater than 3.0 for all 5 questions, suggesting that while Factors 1, 2, and 4 have significantly lower mean scores than Factor 3 ($p<0.01$, test not shown), physicians become more sensitive about posing questions related to patients' presentation of symptoms and possible STIs.

Significant associations were found between Factor 1 (Female sexual dysfunction ($\alpha = .938$)), and religion ($p = 0.02$). This means religion is an important predictor of sexual history taking. Factor 1 also had a highly significant association with clinical specialty ($p <0.001$), in particular OB/GYN has the highest score, which indicates they are more proactive in the management of sexual history taking. Factor 1 has marginal effect on country of medical education ($p=0.09$). However, no significant association was found between scores of Factor 1 and type of practice, place of practice and age. For Factor 2 (History of sexual intercourse ($\alpha = .933$)), only place of practice ($p=0.045$) was found to be significant. Additionally, gender ($p=0.06$), and age ($p=0.08$) were marginally significant. In Factor 3 (STI and knowledge of disease ($\alpha = .892$)), female physicians have significantly higher score than male physicians ($p<0.001$) which suggests higher level of inquiries among female physicians for STIs and SDs. Physicians born in Iran have significantly lower score than others ($p=0.04$) which reflects on lower inquiry about STIs and SDs. Clinical specialty was found to be highly significant with OB/GYN having the highest score ($p<0.001$) translating into these physicians are more comfortable in making inquiries. Religion ($p=0.051$) and country of medical graduation ($p=0.06$) are marginally significant. Factor 4 (Male sexual dysfunction ($\alpha = .901$) has significant association with gender ($p = < 0.001$) with higher score for males and clinical specialty ($p<0.001$) with highest score on Urologists. In addition, Factor 4 has significant differences among religion, ($p = 0.035$), place of practice ($p=0.03$), and age ($p=0.01$).

Table 3b, represents the association between STI variables and all four factors. The variable "Do you treat the sexual partner of your STI patients if their partner is known to you", is highly significant in all factors except Factor 4 ($p=.01$, $p<.001$, $p<.001$, and $p=0.85$ respectively). In all cases, the mean scores of the factors are higher on "Yes", which means the physicians provide treatments for the known patients' partner. Table 3b also shows there is a significant association ($p<0.05$) between the variable "Have you ever undertaken presumptive treatment with the patient with the following symptoms: Dysuria, Urethral Discharge, Vaginal Discharge, Genital Ulcer, Genital Blister" and all four factors. In all cases of Dysuria, Urethral Discharge, Vaginal Discharge, Genital Ulcer, and Genital Blister, physicians have primarily "Sometimes" or "Never" undertaken presumptive treatment with their patients for these symptoms ($P <0.05$ in all cases) (Table 3b).

In regards to the question "What is the estimated percentage of your patients that are diagnosed with sexual dysfunctions? The vast majority of the physicians reported their estimate of patients with sexual dysfunction as "0%" or "1- 25%" (Table 3c). Similar results

were true for the question "What is the estimated percentage of your patients diagnosed with STIs?" This finding shows that physicians may not be aware of the prevalence of STI/SD in the population from which their patients come.

DISCUSSION

This article describes the efficacy of sexual healthcare services/management provided by Iranian-American physicians, and examined how these physicians conduct sexual history taking from patients who have various socio-demographic characteristics. Results of our study suggest that the physicians, irrespective of their specialty, have differing inquiries and methods to initiate communication with both the Iranian and non-Iranian male and female patients related to sexual health care, and/or did not engage patients in such discussions (Table 3b). This is particularly true with Iranian male physicians with male sexual dysfunctions and STIs versus female patients. Female physicians were more proactive about asking questions related to female patients' SDs, STIs, but not as open to discuss male patients' SDs. Place of birth and country of medical practice significantly impacted on physicians' proactivity in taking a sexual history from patients. The focus of sexual healthcare was primarily on reproductive care irrespective of place of birth, country of medical graduation, religion, gender and age. This finding is supported by other studies on Iranian physicians practicing outside Iran [78].

Further results support the idea that physicians primarily rely on their patients' initiation of inquiry about sexual history and symptoms. Female physicians were significantly more proactive and comfortable with sexual history inquiry than male physicians, in particular with their female patients ($p<0.001$) (Table not shown). Older physicians (60+ years), scored lower on sexual history taking. These findings may suggest that initial medical training, plus the local culture where training is received, can be a contributing factor in obtaining a sexual history from patients. With respect to clinical practice specialty, OB/GYNs, urologists, and family physicians were more involved with patients' sexual history taking. This finding is in alignment with other studies [78, 79] which suggest initiation of discussion regarding STIs does not seem to be common in most Iranian physicians' practices. However, prior findings [12, 13] support that the physicians showed proactivity in providing related sexual health education and counselling. Religion played a major role in determining the physicians' approach to discussions of SDs with patients of both genders.

We [13] have previously suggested that physicians showed a significant lack of initiation in sexual health matters when taking into account the sexual orientation of patients, with 71% having hardly any encounter with persons from the LGBT population. This supports the current findings, with respect to the LGBT group, where more than 40% of the physicians felt uncomfortable with the LGBT patients' treatment. This finding also corresponds with several studies from other populations [79, 80, 81] that found significant cultural biases against this particular sub-population.

Management of sexually related problems is essential to holistic health care [82]. Our findings suggest that Iranian-American physicians may hold complex cultural roles and value systems that potentially influence their approach to sexual history taking which, again, may impact their management of sexual healthcare. This complexity, with their own set of barriers and attitudes [12, 13] may be due to variables such as physicians' demographic, educational, and cultural backgrounds, where the topic of sex is perceived as taboo. According to World Health Organization (WHO), "Sexual health varies across different cultures. Practicing physicians may hold different cultural backgrounds. These differences may limit addressing certain aspects of sexual healthcare and interventions, because they are not culturally acceptable or appropriate.

However, sexual healthcare needs to be inclusive of the diversity of needs among individuals across the life span, settings, and circumstances" [83]. With respect to this statement, and our findings, we suggest that in order to improve the management of sexual healthcare, physicians should maintain focus on resolving factors inhibiting sexual history taking. Effective sexual healthcare begins by taking a sexual history from patients [84]. The role of a physician's proactivity is essential in promoting conversations about sexual health in a clinical setting, and to identify presenting problems and clinical resolution, and the management of SDs and STIs [85]. It is essential for providers to have access to adequate resources and innovative strategies in order to accomplish the recommended screening and management guidelines for sexual healthcare [86]. This includes improved training and acquisition of skills to facilitate proactivity among both mainstream and subpopulation physicians with diverse backgrounds.

Another study [87], suggest that less than 50% of US medical schools have more than two hours of sexual medicine education in the curriculum, clinical instructions, or training in managing sexual problems, and many schools avoid the topic of sex education altogether [87]. Improved training during medical school about effective patient communication related to sexual problems is encouraged, in order to facilitate high quality of care. This process is essential, since sexual history taking can potentially reduce the risk of physical and psychological illnesses. Included in holistic care are preventative and referral programs, where the sexual rights of patients are respected.

Even though this study was done among Iranian-American physicians, it is possible that similar sexual healthcare management exists in other physician subpopulations, as well as to a lesser degree among mainstream US physicians. The role of culture in human sexuality is notable, since a person's behavior is strongly influenced by their culture of origin [65, 64]. Culture plays a significant role in many areas of physicians' practices, as well as in the lives of patients, since it affects the expectations of how they 'should be'.

LIMITATIONS OF THE STUDY

This study has limitations that must be taken into consideration when evaluating and interpreting the results. The study population is limited only to California. The low response rate [12], is a limitation, as is the possibility that those who responded are not representative of all the 1,550 physicians who were invited. We have addressed the low response rate in our prior related articles [12, 13]. Further, our findings reflect the perceptions and opinions of the physicians, which may differ from their actual actions in their practices. Finally, our survey was based on self-reported response, which could have resulted in report bias. In spite of these limitations, we believe this pilot study sheds light on issues that exist among Iranian-American physicians, and which may also be present in other subpopulations or mainstream groups of US physicians.

IMPLICATIONS FOR PUBLIC HEALTH PRACTICE AND FUTURE RESEARCH

As sexual healthcare is significantly associated with quality of life, sexual health needs to be considered as an integral part of in-depth training in human sexuality, holistic healthcare and a routine part of checkup at healthcare facilities. Policy makers are encouraged to design effective sexual healthcare training and re-training programs, in which biases for all practicing physicians are explored, identified, and addressed. Such programs should also include an evaluation of the level of sensitivity limiting proactivity, in working with both the average and the marginalized populations. Additionally, sexual dysfunctions should be introduced as a legitimate disease topic for greater discussion in medical schools, including proper diagnosis, intervention, treatment, and interpersonal skills. Medical schools are encouraged to put more emphasis on the benefits of routine SDs and STIs screening in clinical practice. Thus, clinics

would benefit from having standardized 'sexual awareness questionnaires' available for patients as part of their routine sexual history taking, and, based on this, to engage with men and women according to patients' demographic characteristics and sexual healthcare needs.

CONCLUSION

Our study offers an important insight into the management of sexual healthcare in the subpopulation of Iranian-American physicians practicing in California. Our survey found that cultural biases, along with physicians' characteristics, may significantly affect their approach to sexual history taking. Our findings signal a significant neglected area in the sexual healthcare system, within the US, as it relates to subpopulation practicing physicians. A greater understanding of culture, as an influential factor regarding physician's sexual healthcare management, may help in devising strategies to improve sexually related prevention practices. Further qualitative and quantitative studies are needed, to learn about the cultural limitations experienced amongst the Iranian-American physicians, and other subgroups of US physicians, as well as the mainstream practicing physicians. This knowledge will help in determining whether or not similar biases and limitations, which impacts sexual healthcare, are present.

CONFLICT OF INTEREST

None declared.

AVAILABILITY OF DATA AND MATERIALS

Data and materials are available upon written request to the corresponding author.

STATEMENT OF AUTHORSHIP

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Category 3

(a) Final Approval of the Version to be Published
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LIST OF ABBREVIATIONS

US: United States
STI: Sexually transmitted infection
SD: Sexual Dysfunction
STD: Sexually Transmitted Diseases
CDC: Center for Disease Control and Prevention
WHO: World Health Organization

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Table 3a

Comparisons of characteristics for the four factors

	Factor 1		Factor 2		Factor 3		Factor 4	
	Mean (SD)	p*	Mean (SD)	p	Mean (SD)	p	Mean (SD)	P
Gender £								
Male (n=186)	-0.07 (.95)	0.14	0.09 (1.02)	0.06	-0.24(0.96)	0.000	0.15(1.06)	0.000
Female (n=122)	0.10 (1.07)	--	-0.13 (0.96)	--	0.37 (0.95)	--	-0.24(0.96)	--
Place of Birth £								
Iran (n=267)	0.01 (0.97)	0.65	-0.03 (1.00)	0.14	-0.05 (1.02)	0.04	-0.01(0.98)	0.65
Other (n=33)	-0.10 (1.31)	--	0.25 (1.00)	--	0.31(0.82)	--	-0.09(1.12)	--
Religion ££								
Muslim (n=192)	0.03 (1.02)	0.021	0.09 (1.01)	0.202	0.07 (1.03)	0.051	-0.02(1.04)	0.035
Jewish (n=77)	-0.24 (0.98)		-0.08(1.14)		-0.25(0.95)		0.23(1.01)	
Other (n=64)	0.23 (0.90)		-0.15 (0.75)		0.06 (0.90)		-0.21(0.80)	
Country of Medical Graduation £								
Iran (n=172)	0.08 (0.90)	0.09	-0.08 (0.98)	0.12	-0.08(1.00)	0.06	0.04(0.07)	0.37
USA (n=130)	-0.12 (1.12)	--	0.10 (1.03)	--	0.13(0.97)	--	-0.06(0.86)	--
Clinical Specialty ££								
OB/GYN (n=47)	0.66 (0.80)	0.000	-0.04 (1.01)	0.45	0.68(0.57)	0.000	0.12(0.68)	0.000
Family Prac (n=114)	0.05 (0.90)		0.15(1.00)		0.03 (1.02)		-0.05(0.96)	
Urologist (n=25)	-0.03 (0.83)		0.00 (0.69)		-0.03 (0.60)		1.61(0.88)	
Other (n=122)	-0.30 (1.07)		-0.12 (1.04)		-0.28 (1.06)		0.32(0.84)	
Place of Practice ££								
Suburban (n=162)	-0.07 (1.08)	0.403	0.12 (1.06)	0.045	-0.04 (1.07)	0.200	-0.07(1.03)	0.03
Urban (n=127)	0.05 (0.88)		-0.16 (0.89)		0.08 (0.84)		0.15(0.93)	
Rural (n=17)	0.21 (1.07)		0.12 (1.10)		-0.35 (1.33)		-0.44 (1.13)	
Age ££								
30-39 (n=34)	0.11(1.26)	0.67	-0.04(1.09)	0.088	0.13(0.90)	0.60	0.00(0.84)	0.011
40-49 (n=101)	-0.11(1.09)		0.19(1.03)		0.04(1.18)		-0.18(0.93)	
50-59 (n=67)	-0.03(0.96)		-0.20(0.79)		-0.08(0.96)		-0.19(0.87)	
60-89 (n=100)	0.07(0.85)		-0.04(1.05)		-0.02(0.89)		0.27(1.15)	

Note: *p is the p-value and it is considered significant at 0.05.
Factor 1: Female sexual dysfunction (α = .938)
Factor 2: History of sexual intercourse (α = .933)
Factor 3: STI and knowledge of disease (α = .892)
Factor 4: Male sexual dysfunction (α = .901)

Table 3b

Association of STI variables with all factors

	Factor 1		Factor 2		Factor 3		Factor 4	
	Mean (SD)	p*	Mean (SD)	p	Mean (SD)	p	Mean (SD)	p
Do you treat the sexual partner of your STI patient, if their partner is known to you?								
Yes (n= 156, 47.7%)	0.14(0.82)	0.01	0.35(0.88)	<0.001	0.31(0.68)	<0.001	0.03(0.94)	0.85
No (n= 171, 52.3%)	-0.13(1.12)	--	-0.33(1.00)	--	-0.25(1.14)	--	0.001(1.05)	--
Have you ever undertaken presumptive treatment with a patient with the following symptoms?								
Dysuria								
Always (n=43, 12.9%)	0.43(0.60)	<0.001	0.29(0.66)	0.04	0.18(0.67)	<0.001	0.80(0.94)	<0.001
Sometimes (n=194, 57.8%)	0.18(0.89)		0.02(0.99)		0.22(0.87)		0.05(0.89)	
Never (n=98, 29.3%)	-0.53(1.14)		-0.17(1.12)		-0.50(1.17)		-0.46(0.97)	
Urethral Discharge								
Always (n=69, 20.7%)	0.19(0.80)	<0.001	0.09(0.63)	0.03	0.45(0.64)	<0.001	0.33(1.02)	<0.001
Sometimes (n=149, 44.6%)	0.32(0.83)		0.13(1.10)		0.16(0.94)		0.08(0.91)	
Never (n=116, 34.7%)	-0.50(1.11)		-0.21(1.03)		-0.46(1.08)		-0.30(1.01)	
Vaginal discharge								
Always (n=62, 18.6%)	0.27(0.63)	<0.001	0.35(0.94)	0.003	0.46(0.62)	<0.001	0.25(1.14)	<0.001
Sometimes (n=145, 43.4%)	0.31(0.89)		0.00(0.99)		0.15(0.90)		0.12(0.84)	
Never (n=127, 38.0%)	-0.47(1.09)		-0.17(1.02)		-0.39(1.12)		-0.26(1.03)	
Genital Ulcer								
Always (n=71, 21.2%)	0.27(0.85)	0.004	0.18(0.65)	0.001	0.43(0.56)	<0.001	0.40(1.02)	<0.001
Sometimes (n=152, 45.4%)	0.05(0.99)		0.14(1.16)		0.30(0.83)		0.06(0.95)	
Never (n=112, 33.4%)	-0.23(1.06)		-0.31(0.87)		-0.68(1.08)		-0.33(0.96)	
Genital blister								
Always (n=74, 22.1%)	0.28(0.82)	0.001	0.20(0.65)	0.002	0.47(0.59)	<0.001	0.37(1.01)	<0.001
Sometimes (n=145, 43.3%)	0.07(0.99)		0.16(1.17)		0.23(0.80)		0.14(0.92)	
Never (n=116, 34.6%)	-0.25(1.06)		-0.31(0.89)		-0.58(1.15)		-0.40(0.96)	

Note: *p is the p-value and it is considered significant at 0.05.
Factor 1: Female sexual dysfunction (α = .938)
Factor 2: History of sexual intercourse (α = .933)
Factor 3: STI and knowledge of disease (α = .892)
Factor 4: Male sexual dysfunction (α = .901)

Table 3c

Estimated percentage of patients with SDs and STIs

	0%	1 – 25%	26 – 50%	51 – 75%	76 – 100%
What is your estimated percentage of your patients diagnosed with sexual dysfunction?					
Male Iranian patients	38.1	38.5	16.0	7.1	0.3
Female Iranian patients	43.4	43.1	8.4	3.8	1.3
Male non-Iranian patients	32.5	40.8	18.5	7.6	0.6
Female non-Iranian patients	29.0	52.6	12.1	5.6	0.6
Do not take sexual history	42.9	17.6	17.2	12.2	10.1
What is the estimated percentage of your patients diagnosed with STIs?					
Male Iranian patients	39.5	57.4	3.1		
Female Iranian patients	40.1	58.3	1.5		
Male non-Iranian patients	28.3	53.3	18.1	0.3	
Female non-Iranian patients	24.9	58.1	14.3	2.4	0.3

APPENDIX
SECTION I - Sexual Health Care

4. What elements of sexual history do <u>you</u> focus on most?
(Please check (✓) only one answer for each statement)

1 – I never ask
2 – I will avoid it even if the patient brings it up
3 – I respond only if the patient brings it up
4 – I sometimes ask
5 – I always ask

		1	2	3	4	5
1.	Reproductive care and information (Including birth control).	1	2	3	4	5
2.	Patient's presentation of symptoms.	1	2	3	4	5
3.	Sexual orientation of the patient.	1	2	3	4	5
4.	The age at first intercourse.	1	2	3	4	5
5.	Types of sexual practices.	1	2	3	4	5
6.	Last sexual intercourse.	1	2	3	4	5
7.	Sexual partner assessment by the patient.	1	2	3	4	5
8.	Problems related to sexual intercourse.	1	2	3	4	5
9.	A decrease in the frequency of coitus, which may increase the severity of premature ejaculation.	1	2	3	4	5
10.	A period of separation from a sex partner, which may increase the severity of premature ejaculation.	1	2	3	4	5
11.	Obtaining masturbatory history in men, which may be useful to give evidence of persisting libido.	1	2	3	4	5
12.	Satisfaction of female patient with her overall sex life.	1	2	3	4	5
13.	Female patient level of sexual desire or interest.	1	2	3	4	5
14.	Female patient satisfaction with her level of arousal before intercourse.	1	2	3	4	5
15.	Female patient ability to reach orgasm during sexual activity.	1	2	3	4	5
16.	Female patient experience of pain or discomfort during or following vaginal penetration.	1	2	3	4	5
17.	Female patient level of sexual education.	1	2	3	4	5
18.	A masturbatory history in women, which is useful for gaining evidence of persisting libido.	1	2	3	4	5
19.	Consider sensitivity of terms with which the patient may feel uncomfortable with.	1	2	3	4	5
20.	STI prevention practices and symptoms.	1	2	3	4	5
21.	History of prior STIs.	1	2	3	4	5
22.	History of sexual abuse.	1	2	3	4	5
23.	Frequency of sexual intercourse.	1	2	3	4	5
24.	Knowledge patients possess about STIs.	1	2	3	4	5
25.	Having intercourse with more than one partner.	1	2	3	4	5

11. Have you ever undertaken presumptive treatment (treatment before confirmed laboratory diagnosis) in patients with the following symptoms? ***(Please check (✓) one box for each row)***

STIs	Always	Sometimes	Never
a. Dysuria	1☐	2☐	3☐
b. Urethral discharge	1☐	2☐	3☐
c. Vaginal discharge	1☐	2☐	3☐
d. Genital Ulcer	1☐	2☐	3☐
e. Genital blister	1☐	2☐	3☐

13. **Do you treat the sexual partner of your STI patient, if their partner is known to you?** ***(Please check (✓) one box)***

1. ☐ Yes
2. ☐ No

SECTION III – Patient Profile

This section is about the type of patients for which you frequently provide care. Please answer the following questions regarding your patients.

1. What is your estimated percentage of your patients diagnosed with sexual dysfunctional problems? ***(Please check (✓) only one number for each item.)***

	0%	1 – 25%	26 – 50%	51 – 75%	76 – 100%
a. Male Iranian patients	1☐	2☐	3 ☐	4 ☐	5 ☐
b. Female Iranian patients	1☐	2☐	3 ☐	4 ☐	5 ☐
c. Male non-Iranian patients	1☐	2☐	3 ☐	4 ☐	5 ☐
d. Female non-Iranian patients	1☐	2☐	3 ☐	4 ☐	5 ☐
e. Do not take sexual history	1☐	2☐	3 ☐	4 ☐	5 ☐
f. Do not know	1☐	2☐	3 ☐	4 ☐	5 ☐

2. What is the estimated percentage of your patients diagnosed with STIs? ***(Please check (✓) only one number for each item.)***

	0%	1 – 25%	26 – 50%	51 – 75%	76 – 100%
a. Male Iranian patients	1☐	2☐	3☐	4☐	5☐
b. Female Iranian patients	1☐	2☐	3☐	4☐	5☐
c. Male non-Iranian patients	1☐	2☐	3☐	4☐	5☐
d. Female non-Iranian patients	1☐	2☐	3☐	4☐	5☐

SECTION IV – Your Background Information

3. Gender:
1. ☐ Male
2. ☐ Female

4. Age (as of your most recent birthday): |__|__| Years

5. Place of birth
1. ☐ Iran
2. ☐ Other (Please specify)_____

6. Religion:
1. ☐ Armenian
2. ☐ Baha'i
3. ☐ Christian
4. ☐ Jewish
5. ☐ Muslim
6. ☐ Other (Please specify) _____

7. Medical graduation from:
1. ☐ Iran
2. ☐ USA
3. ☐ Other country (Please specify)
_____

8. Clinical specialty:
1. ☐ Dermatologist / Venerologist
2. ☐ Family Practitioner
3. ☐ Gastrologist
4. ☐ Geriatrics
5. ☐ Internist
6. ☐ Obstetrician/Gynecologist
7. ☐ Pediatrician (Youth care)
8. ☐ Plastic Surgeon
9. ☐ Proctologist
10. ☐ Psychiatrist
11. ☐ Urologist
12. ☐ Other (Please specify) _____

9. How long have you worked as a medical practitioner and in what countries? *(Please check "✓" as many as apply)*

1. ☐ Iran: |__|__| Years
2. ☐ USA: |__|__| Years
3. ☐ Other countries: (Please specify)

_____|__|__| Years
_____|__|__| Years
_____|__|__| Years

10. Characteristics of the locality of your current medical practice:

1. ☐ Suburban
2. ☐ Urban
3. ☐ Rural

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