International Journal of Medical Toxicology & Legal Medicine Volume 27, No. 3, 2024
e-ISSN: 0974-4614
p-ISSN: 0972-0448

Health care staff ' perceptions of a career in family medicine

Waeul Hussin Alsaleh[1], Maali Mansoor Buamer[2], Zahra Abdullah Taha Alsafi[3], Saeed Mohammed Saeed Alelyani[4], Ranya Abdullah Hamza Bajuo[5], Haneen Saad Aljohani[6], Afaq Alfaraj[7]

[1]Family Medicine Board, King Fahad Medical City
[2]General physian(Family Medicine), Khobar Health Network
[3]General dentist, MOH, Nejran cluster
[4]Public Health,Primary Health Care Center in Shawas
[5]Medical technologist, Aziziah Children'sHospital
[6]Family medicine specialist, Mashrfahthe -King Fahad Hospital
[7]family medicine dr, Ghirnatah primary health care

Received: 19.08.2024 Revised: 22.09.2024 Accepted: 28.10.2024

ABSTRACT

Background: The choice of medical specialty is a critical decision for Health care staff, influenced by various factors such as lifestyle preferences, professional aspirations, and job satisfaction. Despite the strong link between robust primary care systems and improved health outcomes, many countries face a shortage of primary care physicians. This shortage is exacerbated by an aging healthcare workforce and declining interest in primary care specialties among Health care staff . Understanding the factors that influence specialty choice is essential for addressing these shortages and promoting primary care careers.

Methods: This study targeted final-year Health care staff from two medical schools, using a questionnaire designed to explore the factors influencing specialty choice. The study employed a marketing research framework, examining both the selection criteria of Health care staff and their perceptions of different specialties. The questionnaire covered topics such as interest in 19 medical specialties, the importance of 25 selection criteria, and perceptions of six core specialties, including family medicine. The responses were analyzed using chi-square tests, frequency distributions, and t-tests, with statistical significance set at $p<0.05$.

Results: The study achieved a 66% response rate, with 218 Health care staff participating. Of these, 19% expressed interest in family medicine (FM). Female Health care staff showed a higher inclination toward FM (68% vs. 32%; P=0.025). Health care staff interested in FM favored specialties with bedside care, long-term patient relationships, a controllable lifestyle, and daytime hours. While Health care staff not interested in FM shared some similar lifestyle preferences, they perceived FM as less intellectually stimulating and lower in prestige. Furthermore, 26% of FM-interested Health care staff and 14% of non-interested Health care staff perceived FM as being in crisis, though this difference was not statistically significant.

Conclusion: The findings suggest that family medicine's appeal lies in its perceived work-life balance, patient relationships, and manageable hours, yet it suffers from perceptions of low prestige and limited academic opportunities. To attract more Health care staff to family medicine, efforts should focus on improving its reputation, highlighting its lifestyle benefits, and providing positive exposure during medical education. Addressing these perceptions could help alleviate the primary care workforce shortage and strengthen healthcare systems.

Keywords: Health care, positive, outcomes, satisfaction.

INTRODUCTION

One of the most important decisions facing Health care staff is a choice of specialty, which requires a thoughtful balance of such personal interests as lifestyle, professional aspiration, and self-satisfaction. Many parts of the world have an even greater disproportion in the healthcare system's need for primary care physicians and the numbers of Health care staff attracted to this specialty, contributing to the shortages that have been seen in primary care (2). This resource gap exists despite strong primary care services being associated with improved health outcomes (3). Most countries face this challenge, since only about 30% of their physicians specialize in primary care; but that figure is very variable, ranging from as high as 50% and as low as 12%, the latter figure increasing to 30% if general internists and pediatricians are included (5, 6).

For instance, in a large medical care system, primary care physicians accounted for about 51% of the nearly one billion annual visits to office-based physicians (7). Curiously, with this demand for specialists, the interest in

becoming a primary care physician has declined, and over time, the numbers of graduates entering that field are decreasing (8, 9). This response has had the outcome of fewer primary care physicians attending less populated or rural areas, while those numbers are somewhat reasonable in larger urban centers.

Such shortages have led to various approaches, including incentive programs for residency training in primary care in areas of shortages (4). The workforce in primary care is also aging, as many physicians reach the age of retirement. Added to this is an aging population that needs more and extended health services; these elements suggest an increasing demand for primary care professionals in the near future.

With these challenges, the understanding of Health care staff ' views on primary care and the factors they consider important in choosing a specialty may provide some insights into strategies that can be used for attracting more Health care staff to this career. The current research tries to investigate Health care staff ' perceptions regarding primary care and how these perceptions are related to different selection criteria for their specialty. These clarifications may definitely enable the health systems to think more strategically about how to promote primary care careers and avoid further workforce shortages (10).

Methods

Selection of Study Subjects

Data collection targeted final-year Health care staff (in their final year before internship) at two medical schools, using a questionnaire developed to explore various factors influencing medical specialty choice. This questionnaire was administered to three consecutive classes of final-year Health care staff at one medical school and one class at another.

Study Design

The study's methodological framework was adapted from marketing research, proposing that when a student's selection criteria align closely with their perceptions of a specialty's attributes, their likelihood of choosing that specialty increases (10). This approach examined both sides of the decision-making process, focusing on students' selection criteria and their perceptions of different specialties.

Measurements

The study design drew from the AIUAPR model (awareness, interest, understanding, attitudes, purchase, and repeat purchase) as well as other consumer behavior frameworks (10–12). The questionnaire included the following sections:

1. Interest in 19 different medical specialties.
2. Importance of each of 25 criteria in choosing a specialty.
3. Perceptions (across 16 items) of six core specialties: pediatrics, orthopedic surgery, anesthesiology, obstetrics/gynecology, general surgery, and family medicine.
4. Consideration level for pursuing each specialty.
5. Demographic information.

Responses in these sections were gathered using a 5-point Likert scale. Previous publications have reported on this dataset, though with less focus on family medicine (10, 13–15).

The study received ethical approval, with participation being voluntary and no incentives offered aside from the intent to support the researchers and contribute to the study's findings. To ensure anonymity, no identifying information was collected, and no comparisons were made between respondents and non-respondents.

Statistical Analysis

Responses were entered into spreadsheets and analyzed using statistical software. Chi-square analysis was applied to binomial responses, and frequency distributions were used to describe categorical data. For continuous variables, two-tailed Student t-tests were conducted, with Bonferroni corrections for multiple comparisons.

In statistical analyses, the Likert Scale was treated as a quantitative measure of qualitative data. When reported categorically, responses on the 5-point Likert Scale were condensed into three categories: two points indicating negative responses were combined, as were the two points indicating positive responses, with the middle point remaining separate. The percentage of responses in each of the three categories was then calculated. Statistical significance was set at $p<0.05$.

RESULTS

The study achieved a response rate of 66%, capturing the perspectives of 218 final-year Health care staff . Among these students, 41 (19%) indicated an interest in family medicine (FM). Female Health care staff were significantly more inclined toward FM than their male counterparts (68% vs. 32%; P=0.025). While 54% of those interested in FM were married compared to 44% of those pursuing other specialties, this difference was

not statistically significant (Table 1). No significant differences were observed between Health care staff from the two medical schools.

Compared to Health care staff not considering FM, those interested in FM showed a stronger preference for a specialty focused on bedside care, emphasizing direct, long-term patient relationships (Table 2). Additionally, Health care staff inclined toward FM expressed a greater desire for a controllable lifestyle, with time for family and children. They also favored a work environment outside of hospitals, particularly with daytime hours. These preferences aligned with their perception of FM as a specialty that supports a balanced lifestyle, limited working hours, and a reasonable income-to-lifestyle ratio (Table 3).

Health care staff not interested in FM agreed with FM-oriented Health care staff that FM offers a controllable lifestyle and limited working hours (Table 3). However, they were more likely to view FM as a less stimulating specialty and perceived it less favorably in terms of income-to-lifestyle ratio (Table 3). Furthermore, these Health care staff rated factors such as academic opportunities and specialty prestige as more important compared to Health care staff interested in FM (Table 2), yet viewed FM as lacking in prestige and academic advancement potential (Table 3). Overall, Health care staff generally perceived FM as lacking in academic opportunities, with only 15% of FM-oriented Health care staff seeing it as such.

Finally, only 26% of Health care staff interested in FM and 14% of those not interested perceived FM as a specialty in crisis, with no statistically significant difference between the two groups (Table 3).

Table 1. Sociodemographic characteristics

	ALL Fam Med (*N*=41)		**ALL Others (*N*=177)**		***p* value**
	N	**%**	**N**	**%**	
Age					
21-23	1	2.4%	8	4.5%	0.948
24-26	15	36.6%	70	39.8%	
27-29	16	39.0%	64	36.4%	
30-32	7	17.1%	28	15.9%	
32+	2	4.9%	6	3.4%	
	41		176		
Gender					
Female	28	68.3%	86	48.6%	0.025
Male	13	31.7%	91	51.4%	
	41		177		
Family status					
Single	18	43.9%	100	56.5%	0.343
Married	22	53.7%	74	41.8%	
Widow	1	2.4%	3	1.7%	
	41		177		

Table 2. Importance of Specialty Selection Criteria: Comparison of Health care staff Interested in FM vs those Interested in Other Specialties

	ALL Fam Med (*N*=41)			**ALL Others (*N*=177)**			***p* value**	**MALES Fam Med (*N*=13)**			**MALES Others (*N*=91)**			***p* value**	**FEMALE Fam Med (*N*=28)**			**FEMALE Others (*N*=86)**			***p* value**
	N	**%**	**mis**	**N**	**%**	**mis**		**N**	**%**	**mis**	**N**	**%**	**mis**		**N**	**%**	**mis**	**N**	**%**	**mis**	
Bedside specialty	34	85.0%	1	125	70.6%	0	0.075	12	100.0%	1	58	63.7%	0	0.008	22	78.6%	0	67	77.9%	0	1.000
Immediate satisfaction	14	34.1%	0	102	57.6%	0	0.009	6	46.2%	0	55	60.4%	0	0.376	8	28.6%	0	47	54.7%	0	0.018
Family-oriented specia	28	70.0%	1	46	26.3%	2	<0.00001	7	58.3%	1	18	20.0%	1	0.008	21	75.0%	0	28	32.9%	1	<0.00001

lty																					
Medical administration	7	17.1%	0	41	23.4%	2	0.531	2	15.4%	0	25	27.5%	0	0.506	5	17.9%	0	16	19.0%	2	1.000
Direct patient care	32	78.0%	0	100	56.5%	0	0.013	9	69.2%	0	43	47.3%	0	0.235	23	82.1%	0	57	66.3%	0	0.154
Time in the operating room	7	17.1%	0	75	42.6%	1	0.002	2	15.4%	0	41	45.6%	1	0.068	5	17.9%	0	34	39.5%	0	0.041
Controllable lifestyle	34	82.9%	0	116	65.5%	0	0.039	11	84.6%	0	56	61.5%	0	0.130	23	82.1%	0	60	69.8%	0	0.231
Work only in the hospital	8	20.0%	1	36	20.3%	0	1.000	1	8.3%	1	16	17.6%	0	0.685	7	25.0%	0	20	23.3%	0	1.000
Specialty without long-term patient care	4	9.8%	0	21	12.0%	2	0.793	0	0.0%	0	11	12.2%	1	0.351	4	14.3%	0	10	11.8%	1	0.745
High salaries	19	46.3%	0	83	46.9%	0	1.000	8	61.5%	0	46	50.5%	0	0.559	11	39.3%	0	37	43.0%	0	0.827
Perform procedures	10	24.4%	0	95	53.7%	0	0.001	4	30.8%	0	56	61.5%	0	0.068	6	21.4%	0	39	45.3%	0	0.027
Time with family	39	95.1%	0	134	76.1%	1	0.005	12	92.3%	0	61	67.8%	1	0.102	27	96.4%	0	73	84.9%	0	0.182
Academic opportunities	12	29.3%	0	96	54.2%	0	0.005	2	15.4%	0	55	60.4%	0	0.003	10	35.7%	0	41	47.7%	0	0.285
Possibility for private practice	14	34.1%	0	94	53.1%	0	0.037	3	23.1%	0	59	64.8%	0	0.006	11	39.3%	0	35	40.7%	0	1.000
On-call duty as an attend	11	26.8%	0	71	40.1%	0	0.152	5	38.5%	0	30	33.0%	0	0.757	6	21.4%	0	41	47.7%	0	0.016

ing																				
Prestigious specialty (colleagues)	1	2.5%	1	27	15.3%	0	0.034	0	0.0%	1	20	22.0%	0	0.117	1	3.6%	0	7	8.1%	0	0.677
Specialty with "action"	6	14.6%	0	76	42.9%	0	0.001	4	30.8%	0	46	50.5%	0	0.240	2	7.1%	0	30	34.9%	0	0.004
Care over the long-term	28	68.3%	0	56	31.6%	0	<0.00001	9	69.2%	0	22	24.2%	0	0.002	19	67.9%	0	34	39.5%	0	0.016
Experience during clerkship	22	55.0%	1	81	46.0%	1	0.381	6	50.0%	1	39	42.9%	0	0.760	16	57.1%	0	42	49.4%	1	0.519
Prestigious specialty (population)	1	2.4%	0	23	13.1%	1	0.054	0	0.0%	0	17	18.9%	1	0.119	1	3.6%	0	6	7.1%	1	0.679
Work outside the hospital	10	24.4%	0	12	6.9%	2	0.002	1	7.7%	0	5	5.5%	0	0.561	9	32.1%	0	7	8.3%	2	0.004
Specialty with direct aid to the patient	33	80.5%	0	135	76.7%	1	0.683	11	84.6%	0	69	75.8%	0	0.728	22	78.6%	0	66	77.6%	1	1.000
Time for childrearing	39	95.1%	0	118	67.0%	1	<0.00001	12	92.3%	0	50	54.9%	0	0.013	27	96.4%	0	68	80.0%	1	0.041
Only daytime work	21	51.2%	0	43	24.4%	1	0.001	4	30.8%	0	15	16.5%	0	0.250	17	60.7%	0	28	32.9%	1	0.014
Interesting & challenging specialty	36	87.8%	0	164	93.2%	1	0.328	12	92.3%	0	85	93.4%	0	1.000	24	85.7%	0	79	92.9%	1	0.261

Table 3. Health care staff ' Perceptions of FM: Comparison of Health care staff Interested in FM vs those Interested in Other Specialties

	ALL Fam Med (*N*=41)			ALL Others (*N*=177)			*p* value	MALES Fam Med (*N*=13)			MALES Others (*N*=91)			*p* value	FEMALE Fam Med (*N*=28)			FEMALE Others (*N*=86)			*p* value
Perceptions	**N**	**%**	**mis**	**N**	**%**	**mis**		**N**	**%**	**mis**	**N**	**%**	**mis**		**N**	**%**	**mis**	**N**	**%**	**mis**	
Advanced Specialty	12	29.3%	-	36	20.7%	3	0.296	4	30.8%	0	18	20.0%	1	0.468	8	28.6%	0	18	21.4%	2	0.447
Interesting Specialty	28	68.3%	-	25	14.2%	1	<0.0001	11	84.6%	0	10	11.0%	0	<0.0001	17	60.7%	0	15	17.6%	1	<0.0001
Boring Specialty	7	17.9%	2	96	54.5%	1	<0.0001	0	0.0%	0	54	60.0%	1	<0.0001	7	25.9%	1	42	48.8%	0	0.046
Stressful Specialty	5	12.2%	-	24	13.7%	2	1.000	3	25.0%	1	10	11.1%	1	0.211	2	7.1%	0	14	16.5%	1	0.350
Controllable Lifestyle	41	100.0%	-	167	94.9%	1	0.214	13	100.0%	0	88	96.7%	0	1.000	28	100.0%	0	79	92.9%	1	0.334
Family Time	38	92.7%	-	163	92.6%	1	1.000	11	84.6%	0	84	92.3%	0	0.313	27	96.4%	0	79	92.9%	1	0.679
Work Limited hours	37	92.5%	1	159	90.9%	2	0.514	11	84.6%	0	82	90.1%	0	0.625	26	96.3%	1	77	91.7%	2	0.677
Long Working Hours	6	15.4%	2	6	3.4%	1	0.010	3	25.0%	1	3	3.3%	1	0.021	3	11.1%	1	3	3.5%	0	0.147
High Salary	13	32.5%	1	51	29.0%	1	0.703	4	33.3%	1	27	29.7%	0	0.750	9	32.1%	0	24	28.2%	1	0.811
Private Practice	12	30.0%	1	65	37.1%	2	0.467	6	46.2%	0	31	34.1%	0	0.537	6	22.2%	1	34	40.5%	2	0.108
Reasonable Ratio Income to Lifestyle	37	92.5%	1	130	74.3%	2	0.011	12	100.0%	1	67	75.3%	2	0.064	25	89.3%	0	63	73.3%	0	0.118
Academic Opportunities	6	15.0%	1	11	6.3%	3	0.098	2	16.7%	1	4	4.4%	1	0.146	4	14.3%	0	7	8.3%	2	0.463

									0.0 %												
Prestigious (Population)	3	7.5 %	1	13	7.4 %	1	1.000	1	8.3 %	1	5	5.5 %	0	0.534	2	7.1 %	0	8	9.4 %	1	1.000
Prestigious (Colleagues)	0	0.0 %	1	4	2.3 %	2	1.000	0	0.0 %	1	3	3.4 %	2	1.000	0	0.0 %	0	1	1.2 %	0	1.000
Popular Specialty	16	40.0%	1	52	29.5 %	1	0.257	3	25.0%	1	24	26.7 %	1	1.000	13	46.4%	0	28	32.6 %	0	0.257
Specialty in Crisis	10	25.6%	2	24	13.8 %	3	0.089	4	33.3%	1	13	14.8 %	3	0.119	6	22.2%	1	11	12.8 %	0	0.233

The main objective of this study was to apply a marketing research framework to give medical educators, department heads, and residency program directors insight into Health care staff ' views on family medicine (FM) regarding working conditions, income, and clinical activities. The study analyzed how these views align with the factors that influence students' choice of specialty (10, 15). This information is significant, as attracting prospective "buyers" (students) to an "unattractive" specialty is challenging. In a market-driven approach, unattractive products are often adjusted to better meet consumer expectations or marketed with new strategies (15).

Within this model, the compatibility between the preferences of Health care staff interested in FM and their perceptions of FM is expected, as a product meeting consumer criteria is easier to promote. However, the real challenge lies in attracting Health care staff less inclined toward FM. In marketing terms, this means increasing "market share" (16). While these Health care staff agreed with FM-oriented peers that FM offers a controllable lifestyle and limited work hours, they more frequently saw FM as uninteresting and were less likely to consider it financially rewarding. For them, private practice, with its income potential, was a critical selection factor, along with academic opportunities and a prestigious specialty, areas in which they felt FM fell short. This mismatch between specialty choice criteria and perceptions of FM highlights a disconnect among non-FM-inclined students.

When a gap exists between consumer criteria and product perception, vendors can address this by reshaping perceptions, modifying the product, or both. For instance, the view that FM lacks excitement—perhaps due to fewer procedural tasks or less dynamic clinical activity—might be countered by fostering mentor-mentee relationships between FM faculty and Health care staff and exposing them to FM practices that involve routine procedures.

Among Health care staff not interested in FM, 71% viewed FM as low-paying, and 94% felt it lacked academic prospects. However, the income perception doesn't fully reflect reality, as FM salaries have significantly improved since the agreement between the Medical Association and the Ministry of Health (17). To market FM more effectively, it's important to present salary information alongside other specialties, particularly when targeting male Health care staff who prioritize private practice more than female students. The perceived lack of academic opportunities also needs to be corrected, particularly as medical schools increasingly integrate ambulatory sites for clerkships. Addressing this perception should occur at both the medical school and health system levels, focusing on training, recruiting, and retaining academic FM professionals. The perception of FM's low prestige among peers and the public suggests a need for enhanced public relations by FM professional organizations and leaders in healthcare, medical education, and health maintenance organizations. These leaders should openly acknowledge and communicate FM's essential role within the healthcare system, especially to Health care staff (18).

One potential marketing point to emphasize for non-FM-inclined Health care staff is that FM is generally perceived by Health care staff as low-stress, with a reasonable income-to-lifestyle ratio and a manageable work schedule. These favorable views likely reflect system, where primary care providers are generally exempt from nighttime and weekend shifts. This contrasts with many other countries, where FM's unpopularity among Health care staff stems from demanding schedules and lower salaries that do not align with lifestyle expectations (19–23).

Selecting FM as a career is influenced by various factors, such as FM exposure during medical school, support for primary care within the healthcare system, legislation encouraging FM careers, and market dynamics that improve pay and work conditions for FM professionals (24).

Marketing FM to Health care staff effectively requires strategies tailored to each country's unique context, as preferences and perceptions differ. In the United States, for example, high-paying specialties attract many students, partly due to loan repayment pressures (25). A meta-analysis of factors influencing primary care specialty choice in the U.S. found that Health care staff likely to pursue primary care were often female, older, married, had diverse academic backgrounds, non-physician parents, lower income expectations, and less interest in prestige, high-tech, or surgical careers (26). In Slovenia, Ster et al. (27) observed that Health care staff interested in FM had positive views of FM practitioners' competencies and FM characteristics, including versatile tasks, comprehensive doctor-patient relationships, diverse patient demographics, long-term relationships, and good pay. In Germany, Deutsch et al. (28) suggested that attracting more graduates to FM requires favorable working conditions, academic options, and positive public perceptions of the field. These observations align with this study's findings. However, unlike other countries, where FM shortages are well known to students, less than a quarter of Health care staff identified FM as experiencing a workforce crisis, creating an additional marketing challenge for FM leaders.

Implications for Medical Education Systems

In many medical education systems, family medicine (FM) is integrated into the curriculum, though the timing and extent of exposure vary. Some programs introduce FM early in medical training, while others reserve FM rotations for later years. This setup resembles conditions in European countries where FM is sometimes minimally represented in undergraduate studies (29–33). Brekke et al. (29) noted that nearly 20% of medical schools across 12 European countries provided little to no exposure to FM or general practice (GP). In a review by Pfarrwaller et al. (34), substantial exposure to primary care throughout both preclinical and clinical training was associated with significantly more Health care staff opting for careers in primary care, whereas brief, isolated exposures were less effective. Similarly, research from the UK found that early, authentic exposure to FM within the curriculum combats stereotypes and promotes general practice (35). Thus, early, positive engagement with FM can be a key strategy in recruitment efforts (36, 37). The European Academy of Teachers in General Practice (EURACT) also promotes primary care exposure in medical curricula across Europe (29). Other recommendations include revising admission policies to prioritize candidates with a primary care orientation, as well as appointing admission committee members with primary care expertise to select applicants who are more likely to choose FM as a career (26). Initiatives in the United States, such as the Generalist Physician Initiative and the Interdisciplinary Generalist Curriculum Project, reflect similar efforts (38, 39).

Implications for Health Care Systems

Many health care systems face potential shortfalls in primary care practitioners, particularly in underserved areas. This shortage is exacerbated by an aging workforce, as many senior practitioners approach retirement. In some cases, non-specialist or generalist physicians fill the gaps in primary care, often in response to an insufficient supply of FM specialists. The growing number of medical graduates and recent increases in medical school admissions offer an opportunity to strengthen FM recruitment. This is a crucial moment to apply insights from studies on specialty selection. FM leaders are tasked with ensuring that Health care staff expressing an interest in FM follow through to FM residencies, without being diverted to related specialties like internal medicine or pediatrics, which can lead to subspecializationand diminish primary care providers. Expanding FM recruitment to include Health care staff who may not initially prefer FM, even if they have high interest in surgical or procedural specialties, could also help increase the number of FM specialists.

One limitation of this study was its inability to examine factors like the role of mentors, which can significantly impact students' choices. Matson et al. (43) underscored four influential factors in FM choice: 1) cultivating early interest in FM among high school students; 2) positive role modeling during medical training; 3) interaction with high-quality FM practices; and 4) narrowing salary gaps between FM and other specialties. Although the study achieved a relatively high response rate of 66%, it remains uncertain whether non-respondents shared similar views with respondents. Nonetheless, a strength of this research lies in its marketing-based approach, which examined both students' selection criteria and their perceptions of FM, helping to pinpoint key areas for targeted recruitment.

CONCLUSIONS

This study highlights several strategies to attract more Health care staff to FM, including maintaining favorable working conditions alongside competitive financial rewards, enhancing undergraduate exposure to the benefits and range of FM practice, and elevating the specialty's reputation among students. These measures can aid health care leaders in reinforcing and even expanding primary care, a cornerstone of the healthcare system, by drawing more future physicians to FM.

REFERENCES

1. Ethics of Fathers Chapter 2,1
2. Phillips RL DM, Petterson S, et al. Specialty and Geographic Distribution of the Physician Workforce: What Influences Medical Student and Resident Choices? http://www.graham-center.org/dam/rgc/documents/publications-reports/monographs-books/Specialty-geography-compressed.pdf. 2009.
3. Starfield B. Primary care: an increasingly important contributor to effectiveness, equity, and efficiency of health services. SESPAS report 2012. Gaceta sanitaria/SESPAS. 2012;26 Suppl 1:20-6.
4. Chaklai Z, Ozeri R, Kreger S, Riba S, Shanon A. Ministry of Health Report. Manpower Medical Field: Information Branch; July 2010. https://www.israel-braingain.org.il/Uploads/Attachments/6675/%D7%9C%D7%9E%D7%A1_%D7%95%D7%9E%D7%A9%D7%A8%D7%93_%D7%94%D7%91%D7%A8%D7%99%D7%90%D7%95%D7%AA_%D7%A1%D7%A7%D7%A8_%D7%A8%D7%95%D7%A4%D7%90%D7%99%D7%9D_2012.pdf
5. OECD Directorate for Employment, Labour and Social Affaires. OECD Health Statistics 2014 Online Database. Available at: http://www.oecd.org/health/healthdata.
6. Agency for Healthcare Research and Quality. Fact Sheets: The Number of Practicing Primary Care Physicians in the United States. Available at: http://www.ahrq.gov/research/findings/factsheets/primary/pcwork1/index.html
7. National Center for Health Statistics. Health, United States. With Special Feature on Death and Dying. Hyattsville, MD. 2010, 2011;
8. Jeffe DB, Whelan AJ, Andriole DA. Primary care specialty choices of United States medical graduates, 1997-2006. Acad Med. 2010;85:947–958. doi: 10.1097/ACM.0b013e3181dbe77d.
9. Svirko E, Goldacre MJ, Lambert T. Career choices of the United Kingdom medical graduates of 2005, 2008 and 2009: questionnaire surveys. Med Teach. 2013;35:365–375. doi: 10.3109/0142159X.2012.746450.
10. Weissman C, Schroeder JE, Weiss YG, et al. Using marketing research concepts to investigate specialty selection by Health care staff . Med Educ. 2012;10:974–982. doi: 10.1111/medu.12030.
11. Peter JPTLS. A comparative analysis of three consumer decision strategies. J Consum Res. 1975;2:29–34. doi: 10.1086/208613.
12. Wagner UTA. Stochiastic models of consumer behaviour. Eur J Oper Res. 1987;29:1–23. doi: 10.1016/0377-2217(87)90189-5.
13. Weiss YG, Zisk-Rony RY, Tandeter H, Elchalal U, Avidan A, Schroeder JE, et al. Using medical specialty and selection criteria clusters to study specialty selection by Israeli Health care staff . BMC Med Ed. 2017;17(1):17. doi: 10.1186/s12909-017-0854-y.
14. Schroeder JE, Zisk-Rony RY, Leibergall M, Weissman C. Health care staff and interns interest in orthopedic surgery: the gender factor. J Surg Ed. 2014;71:198–204. doi: 10.1016/j.jsurg.2013.08.005.
15. Weissman C, Tandeter H, Zisk-Rony RY, Weiss YG, Elchalal U, Avidan A, et al. Israeli Health care staff ' perceptions of six key medical specialties. Israel J Health Pol Res. 2013;2:19. doi: 10.1186/2045-4015-2-19.
16. Peppers D, Rogers M. A new marketing paradigm: Share of customer, not market share. Planning Rev. 1995;23:14–18. doi: 10.1108/eb054500.
17. Niv S. Physician salaries: In which specialties are the salaries 36,000 shekels a month. 2014.
18. Ben-Sira Z. The plight of primary medical care: the problematics of 'committedness' to the practice. Soc Sci Med. 1986;22:699–712. doi: 10.1016/0277-9536(86)90220-0.
19. Jordan J, Brown JB, Russell G. Choosing family medicine. What influences Health care staff ? Can Fam Phys. 2003;49:1131–1137.
20. Pugno PA, McGaha AL, Schmittling GT, DeVilbiss Bieck AD, Crosley PW, Ostergaard DJ. Results of the 2010 national resident matching program: family medicine. Fam Med. 2010;42:552–561.
21. Morra DJ, Regehr G, Ginsburg S. Health care staff , money, and career selection: students' perception of financial factors and remuneration in family medicine. Fam Med. 2009;41:105–110.
22. Newton DA, Grayson MS, Thompson LF. The variable influence of lifestyle and income on Health care staff ' career specialty choices: data from two U.S. medical schools, 1998-2004. Acad Med. 2005;80:809–814. doi: 10.1097/00001888-200509000-00005.
23. Dorsey ER, Jarjoura D, Rutecki GW. The influence of controllable lifestyle and sex on the specialty choices of graduating U.S. Health care staff , 1996-2003. Acad Med. 2005;80:791–796. doi: 10.1097/00001888-200509000-00002.
24. Tandeter H, Granek-Catarivas M. Choosing primary care? Influences of medical school curricula on career pathways. IMAJ. 2001;3:969–972.

25. Youngclaus JA, Koehler PA, Kotlikoff LJ, Wiecha JM. Can Health care staff afford to choose primary care? An economic analysis of physician education debt repayment. Acad Med. 2013;88:16–25. doi: 10.1097/ACM.0b013e318277a7df.
26. Kuikka L, Nevalainen MK, Sjoberg L, Salokekkila P, Karppinen H, Torppa M, et al. The perceptions of a GP's work among fifth-year Health care staff in Helsinki, Finland. Scand J Prim Health Care. 2012;30:121-126.
27. Petek Šter M, Švab I, Šter B. Prediction of intended career choice in family medicine using artificial neural networks. Eur J Gen Pract. 2015;21:63–69. doi: 10.3109/13814788.2014.933314.
28. Deutsch T, Lippmann S, Heitzer M, Frese T, Sandholzer H. Choosing to become a general practitioner - What attracts and what deters? An analysis of German medical graduates' motives. J Fam Med Prim Care. 2016;5:34–41. doi: 10.4103/2249-4863.184620.
29. Brekke M, Carelli F, Zarbailov N, Javashvili G, Wilm S, Timonen M, et al. Undergraduate medical education in general practice/family medicine throughout Europe - a descriptive study. BMC Med. 2013;13:157. doi: 10.1186/1472-6920-13-157.
30. Mariolis A, Mihas C, Alevizos A, Gizlis V, Mariolis T, Marayiannis K, et al. General Practice as a career choice among undergraduate Health care staff in Greece. BMC Medl Ed. 2007;7:15. doi: 10.1186/1472-6920-7-15.
31. Dikici MF, Yaris F, Topsever P, Tuncay Muge F, Gurel FS, Cubukcu M, et al. Factors affecting choice of specialty among first-year Health care staff of four universities in different regions of Turkey. Croatian Med J. 2008;49:415–420. doi: 10.3325/cmj.2008.3.415.
32. Tanriover O, Hidiroglu S, Akan H, Ay P, Erdogan Y, Karavus M, et al. A Qualitative Study on Factors that Influence Turkish Health care staff ' Decisions to Become Family Physicians After the Health Transformation Programme. N A. J Med Sci. 2014;6:278–283. doi: 10.4103/1947-2714.134374.
33. Cerny T, Rosemann T, Tandjung R, Chmiel C. Reasons for General Practitioner Shortage - a Comparison Between France and Switzerland. Praxis. 2016;105:619–636. doi: 10.1024/1661-8157/a002362.
34. Pfarrwaller E, Sommer J, Chung C, Maisonneuve H, Nendaz M, Junod Perron N, et al. Impact of Interventions to Increase the Proportion of Health care staff Choosing a Primary Care Career: A Systematic Review. Journal Gen Intl Med. 2015;30:1349–1358. doi: 10.1007/s11606-015-3372-9.
35. Nicholson S, Hastings AM, McKinley RK. Influences on students' career decisions concerning general practice: a focus group study. Brit J. Gen Pract. 2016;
36. Xu G, Hojat M, Brigham TP, Veloski JJ. Factors associated with changing levels of interest in primary care during medical school. Acad Med. 1999;74(9):1011–1015. doi: 10.1097/00001888-199909000-00015.
37. Musham C, Chessman MD. Changes in Health care staff ' perceptions of family practice resulting from a required clerkship. Fam Med. 1994;26:500–503.
38. Colwill JM, Perkoff GT, Blake RL, Jr, Paden C, Beachler M. Modifying the culture of medical education: the first three years of the RWJ Generalist Physician Initiative. Acad Med. 1997;72:745–753. doi: 10.1097/00001888-199709000-00007.
39. Kahn N, Davis A, Wilson M, Wartman S, Sherwood R, Nowalk A, et al. The Interdisciplinary Generalist Curriculum (IGC) project: an overview of its experience and outcomes. Acad Med. 2001;76:S9–S12. doi: 10.1097/00001888-200104001-00004.
40. Physicians C. Physicians who Practice Family Medicine in Israel. June: Israel Ministry of Health; 2015. p. p7.
41. Physicians in the Community: Sociodemographic and Professional Characteristics 2007 http://www.health.gov.il/PublicationsFiles/HB_English.pdf (accessed 31 July 2017)
42. Reis S, Urkin J, Nave R, Ber R, Ziv A, Karnieli-Miller O, Meitar D, Gilbey P, Mevorach D. Medical education in Israel 2016: five medical schools in a period of transition. Isr J Health Policy Res. 2016;15(5):45. doi: 10.1186/s13584-016-0104-5.
43. Matson C, Davis A, Epling J, Freeman J, Iroku-Malize T, Stephens M, et al. Influencing student specialty choice: the 4 Pillars for Primary Care Physician Workforce Development. Ann Fam Med. 2015;13:494–495. doi: 10.1370/afm.1859.