

The Impact of Socio-cultural Factors in Qatar on Females in Engineering

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My name Maha Al-Sheeb. I am a joiner chemical engineer student Class of 2020. I have one brother and one sister. I joined the Academic bridge program in 2014. I believes in "Difficult roads often leads to beautiful destination" Grand.Aspiration.

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Abstract

This paper provides a detailed insight into the Arab culture, specifically, the perceptions of Qatari culture on women in engineering. The Qatari culture greatly discourages and limits females from entering engineering fields, which is mainly due to Qatar's culture mentality. In addition, this paper will show how the socio-cultural factors in Qatar play a main role in hindering females from pursuing engineering. The three main factors are gender roles, female education, and female in mixed workplace. These factors unfortunately deprive women from their rights of independence, education, and choice of career.

Introduction

Engineering is considered to be a challenging yet rewarding field to be in. It applies physical science along with mathematics to produce useful materials and energy. Engineering studies are crucial in the Arab countries, especially in Qatar, as most of its industries (oil and gas production) are highly dependent on major engineering fields. However, the mentality of some in the Arab society, especially in Qatar, strongly disapproves the idea of females entering the field of engineering. While the Middle East and North Africa region have fairly high numbers of female engineering students, many females do not go on to the workforce [1].

As a young woman living in Qatar, I've received many disapprovals from my parents regarding the idea of me studying engineering. Therefore, to create a community of practice that encourages young Qatari females to study engineering, I chose to study the Qatari society and the factors that contribute to females becoming engineers. My objective in this study is to develop strategies for empowering other females to enter and stay in the engineering field in Qatar and other Arabian Gulf countries.

Socio-cultural Factors Influencing Education and Employment of Female Engineers in Qatar

Qatar is a small nation-state in the Middle East bordered by the Kingdom of Saudi Arabia, and its economy relies primarily upon petrochemicals, such as liquefied natural gas. Only a small portion (around 10-12%) of the 2.6 million population are Qatari citizens [2]. Qatari citizenship is passed to children only through their father, although the government has passed a law to grant permanent residency to some children of Qatari mothers [3].

The treatment of women in Qatar is influenced by intertwining religious and cultural factors. The Wahhabi movement is a relatively conservative faction of Sunni Islam, and zealous followers

encourage more fundamentalist interpretations of religious doctrine, such as moral behavior for both genders, segregation of males and females in public areas, and the guardianship of women through the rights of their *mahram* (familial guardian or escort, such as a father, uncle, or brother) or their husband. The cultural influences of Bedouin (nomadic tribes) and Khaleeji (tribes of the eastern portion of the Arabian peninsula) are closely linked, even indistinguishable from many of these same sociocultural norms.

For females in Qatar, these sociocultural norms can impact their ability to work, particularly in male-dominated fields like engineering, and their rights as women. For example, adult men who are 25+ years old can travel alone; however, adult women who are 25+ years old are not allowed to travel without a male escort. Traditional families tend to believe that a female holding a job is only acceptable if she works in a female-only department. However, when it comes to men they can work wherever they want whether it's a male-only or a mixed working environment.

Even with education, traditional families will not allow their daughters to study abroad or in a local mixed gender environment. This is because it's considered to be shameful when a girl interacts with a strange men even for work and school purposes. However, when their sons want to study abroad or in a local mixed university, it's acceptable.

However, over the past thirty years, major economic and sociocultural changes have impacted gender roles in Qatar. Women are now marrying later in life than they did traditionally, as the table below shows.

Table 1. Marriage Patterns of Qatari Women, n=2,403 [4]

Categories	Percent
Ever married women ages 15-19	4.7%
Ever married women ages 20-24	35.3%
Ever married women ages 25-29	62.8%
Never married women ages 30-34	27.5%
Never married women ages 35-39	11.7%

Additionally, a survey sample of 4,768 Qataris strongly agreed that women's education was more valued for the job market (72%) than for the marriage market (30%); again, a significant shift in traditional values [4]. The same survey found that 8 out of 10 Qataris agreed or strongly agreed that women should be allowed to work out of the home, as shown in Figure 1.

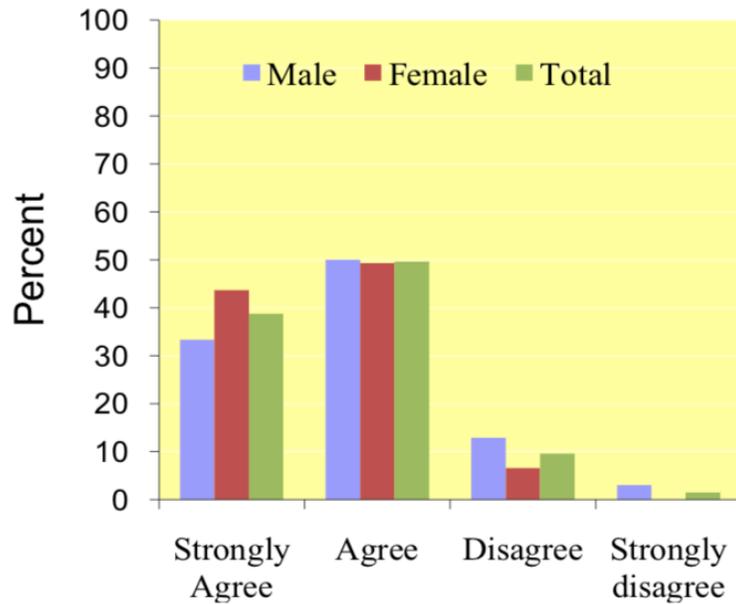


Figure 1. Level of Agreement with this Statement: “A married woman should be allowed to work outside the home if she wants.” [4]

While these changes in the behavior and perception of Qatari females indicates that the broader society values their pursuit of education and employment, problems still exist. A recent study of female engineering students in Qatar found that they experienced gender bias from both professors and male peers, as well as companies in the engineering industry [5]. The transition from university to an engineering career has been shown to be a significant factor in the success of a female graduate in the Middle East region [6], so further information about the experiences of Qatari females in the engineering field is needed.

In particular, the research team was interested in the microaggressions experienced by females in the engineering workplace in Qatar. Microaggressions are communications (intentional or unintentional) that target a person or group for derogatory or hostile reasons, and they often occur as part of ordinary, everyday activity [7]. For people in minority groups, such as people of color, LGBTQ, women in engineering, and other intersecting identities, these microaggressions are often subtle but consistent in their workplace life [8].

This paper seeks to answer the following research questions:

- What microaggressions are experienced by Qatari women in the engineering workplace?
- What sociocultural factors influence these experiences?
- What might engineering educators do to counteract these and similar experiences?

Methods

To gather information about the experiences of females studying engineering and working in a mixed gender environment, six interviews were conducted. The interviewees are:

- Noora: A young female engineer who earned her bachelor's with a 3.9 GPA. She used to work in the oil and gas industry as a corrosion engineer and had to leave her job when she got married.
- Hessa: A young female accountant student at a local university who had to change her major from mechanical engineering to accounting because mechanical engineering was not offered as a major to female students.
- Sara: A female engineering student who is currently interested in working in the oil and gas industry.
- Aisha: A mother of three children who never got an education or went to school due to her father's disapproval of the idea of females getting education and believing that education is only meant for men.
- Mohammed: An adult male who works for the military who is greatly against the idea of women studying engineering and working/studying in a mixed environment
- Dr. Z: A female engineering professor at a local university.

The interviewees were selected based on their diversity of experiences with females in engineering in Qatar.

The interviews were conducted in spring 2018, and each interview lasted approximately one hour. The following questions were asked of each interviewee:

- Do you think females can study in a mixed-gender environment?
- What are some of the obstructions that females are facing in the engineering field?
- Do you think females can study engineering?

All of the interviewees expressed their opinion regarding how they feel about women in engineering. This will be further discussed in the following sections of the paper.

Limitations of the Study

The scope of this study is small, as it was completed during the course of a semester. Only six participants were interviewed in order to gain clarity on the particular sociocultural beliefs. Thus, it is difficult to generalize the results for a larger population. Further research is needed to understand the complex variables that lead to women being discouraged from entering the engineering field in the Arabian Gulf region.

Results and Discussion

After the interviews were conducted, the transcripts were analyzed for common themes. Three main themes emerged: gender roles, female education, and females in a mixed workplace. In

each of these instances, women were highly discouraged from entering the field of engineering due to microaggressions. The following sections discuss these experiences in further detail.

Gender Roles

In the interviews, female participants reported that some members of their families do not prefer such fields like engineering for their daughters because the family members consider engineering jobs as difficult jobs which females cannot withstand. They noted that these families will not allow females to be involved in a difficult job unless it was something simple such as being an office doing easy paperwork or working in a female only department. During my interview with Noora, a corrosion engineer in the oil and gas industry who earned her bachelor degree in engineering with a GPA of 3.9 and has received many awards for her academic and professional achievements, she stated that “It took me years to convince my family about my career choice, however, when I got married, my husband forced me to leave my job and told me that I’m not allowed to go to work and that I have to stay at home and take care of the house and the kids.” Also, she stated that “Two of my friends in [a local university] who used to study engineering had to change their majors once they got engaged.”

As a result, these microaggressions led to the challenges and disapprovals the study participants faced when it comes to studying engineering and studying/working in a mixed gender environment, a finding in keeping with other studies [9]. It is heartbreaking to know that a woman is forced to stop her growth in the path of success even though she carries great potential within her. As a result of this mentality, men get more opportunities to work and develop their skills and knowledge, while women are forced to trap their great abilities within themselves due to disapproval and discouragement of their potential.

Female Education

Similar microaggressions greatly affected the educational progress of some of the female study participants. According to my interviewee Aisha, she mentioned that she never went to school because her father didn’t believe that girls are supposed to get an education; he believed that education is only for men. This finding is consistent with other studies of Arab women, which found that some girls are deprived of basic education in mathematics and science [10].

Institutions also impeded females’ progress towards an engineering degree. For example, some universities offer mechanical and civil engineering programs for males only. My interviewee Hessa stated that she’s studying accounting now, but she originally wanted to study mechanical engineering and couldn’t because this program was only offered for male students.

Both of these results are microaggressions that deprive women of their rights as human beings to get proper education. Other studies have advocated that females should have the rights of education in every field that help them to excel in their personal and professional life [10]. A strong basic preparation education for females could contribute in improving the knowledge they have in their daily lives and improve their employment opportunities. Inviting the females' contribution to the development of the country could significantly increase the rate of improvement and growth of the country. Therefore, efforts from the Qatari government, educational system and society is required to promote and encourage female education especially in engineering. Universities can focus on attracting females to enroll in engineering programs and provide an environment that gives confidence to women [5]. Additionally, if all regional universities started offering all the majors of engineering for both genders, this will give females the belief that they can fit in the major that they desire to study.

Females in a mixed workplace

The engineering field is a male-dominant field and it is difficult for some females in Qatar to be allowed to work in a field with male colleagues. My interviewee Mohammed said that “studying and working in a mixed-gender school affects the reputation of a female because she talks and interacts and spends time with a male.” Therefore, when the female reputation gets affected by the workplace, this also affect her chances of getting married in the future as Mohammed said “when it comes to marriage, when we ask about the girl, we don't prefer to marry a girl that has been studying or working in a mixed gender environment.” His response implies a fear of having his daughters or wife being judged in a bad way because of their learning or working environment.

A similar belief was observed by my interviewee Sara when applying for employment at a local company. As she stated,

I applied to [a local company]'s scholarship program and was called for an interview. For my interview, I made sure I was prepared, and I arrived on time. However, even though I arrived on time, they made me wait for an hour, so they can interview every guy that came for the interview before me. Also, I was put in a secluded room with only one girl waiting with me while the other waiting room was filled with boys.

I was finally called in the meeting room, and I immediately noticed that it was filled with males and only one female. Furthermore, the interviewer started emphasizing on the importance of getting good grades to be considered in the program. Thus, I told him that I was a good student with a 3.88 GPA. He immediately laughed and said: “We want your overall GPA, not your best semester one.” I replied that this was my overall. So, he asked me if I got this GPA because I didn't take science subjects yet, but I replied that I did take science subjects, and in fact I got straight A's in them and that I have taken

all of my freshmen year subjects. He contradicted himself then by saying that the company does not care about grades, it cares about extracurricular activities. Therefore, I told him I participated as a volunteer in many events, joined an organization at my university, and that I am currently doing high energy physics research. But he still was unimpressed.

Finally, what I think was the worst part of my interview, was the fact that he felt the need to ask me several times if I was okay with working offshore. And, no matter how many times I answer that I was, he would still ask the same question five minutes later. By the end of the interview, he asked me the same question, then asked: “Are you married? If you are not, you should write in your marriage contract that you demand a house to be built for you in Mesaieed, so you do not arrive late for work.” I was shocked by his audacity, and how everyone in the room was laughing at his “question.” It was truly an awful and sexist experience that I hope no one ever experiences.

Although recently Qatar culture has become more open to the idea of females’ involvement in engineering and mixed workplace, the discrimination between females and males is still noticeable. According to my interview with Dr. Z, an engineering professor, she stated that she has faced discrimination from her male colleagues when it comes to involvement in new projects, research, or meetings. She has been excluded from project discussions and major responsibilities and felt neglected by her male colleagues. During her 12 years at her university she has been asked twice only – last year and this year - by a non-Arab male colleague to join him in a research. Her experience clearly shows how subtle forms of gender discrimination still exist in engineering workplaces.

Recommendations and Conclusion

Despite the remarkable progress made worldwide in the struggle for gender equality, women in some communities are still denied their basic rights. Even though in the United States the enactment of Title IX in 1972 guaranteed the right to education to women, some serious obstacles still persist. Gender discrimination carries on to the workplace [11] [12]. Women in the U.S are underpaid compared to men holding the same positions and doing the same job [13]. They are also being excluded from work fields considered traditionally performed by men [14].

It is clear and evident from the findings of this paper that in Qatar women also suffer from gender discrimination in the educational field as well as in the workplace. The underlying motives might not be the same as in the U.S; however, the impact on women and society is similar. Women still lack full access to fields traditionally performed by men such as engineering. In some cases, they are forced to study other disciplines and follow different career paths; in other cases, they are forced to quit their engineering jobs for other considerations such as marriage and mixed-workplaces.

Across the world, people must be made aware of gender discrimination and consciously recognize it as a problem. This could be achieved by discussing stories of successful women in different fields, especially the fields traditionally performed by men and by raising awareness on easily accessible platforms. Her highness Sheikha Moza Bint Nasser Al-Missned is one of the most inspirational and strong female role models. She was able to lead education and social reforms in Qatar. She also has founded national and international development projects, and Qatar Foundation is an example of one of her successful projects. This success should extend to all females in STEM fields [15].

It is also necessary for the local educational institutions to update their curricula and grant women the right to study engineering. As a result, engineering firms must develop employment strategies to accommodate women in the workplace. Least but not last, households must be engaged in the process because the cultural aspects behind gender discrimination lies there.

References

- [1] UNESCO, “Improving access to engineering careers for women in Africa and in the Arab States,” *UNESCO*. [Online]. Available: <http://www.unesco.org/new/en/natural-sciences/science-technology/engineering/infocus-engineering/women-and-engineering-in-africa-and-in-the-arab-states/>. [Accessed: 26-Jan-2019].
- [2] “Population of Qatar by nationality in 2017,” *Priya DSouza Communications*, 07-Feb-2017. [Online]. Available: <http://priyadsouza.com/population-of-qatar-by-nationality-in-2017/>. [Accessed: 22-Mar-2019].
- [3] A. Younes, “Qatar first Gulf nation to grant permanent residency to expats,” *Al Jazeera*. [Online]. Available: <https://www.aljazeera.com/news/2018/09/qatar-gulf-nation-grant-permanent-residency-expats-180905132806905.html>. [Accessed: 22-Mar-2019].
- [4] Social and Economic Survey Research Institute, “First Annual Omnibus Survey: A Survey of Life in Qatar,” Qatar University, 2010.
- [5] S. Hillman, G. Salama, E. O. Eibenschutz, S. M. A. Awadh, and L. El Said, “Being Female and an Engineering Student in Qatar: Successes, Challenges, and Recommendations,” in *Proceedings of the American Society for Engineering Education Annual Conference and Exposition*, Columbus, OH, 2017.
- [6] H. Baytiyeh, “Women Engineers in the Middle East from Enrollment to Career: A Case Study,” in *Proceedings of the American Society for Engineering Education Annual Conference and Exposition*, San Antonio, TX, 2012.
- [7] D. W. Sue, C. M. Capodilupo, G. C. Torino, J. M. Bucceri, A. M. B. Holder, K. L. Nadal, and M. Esquilin, “Racial microaggressions in everyday life: implications for clinical practice,” *Am. Psychol.*, vol. 62, no. 4, pp. 271–286, May 2007.
- [8] T. E. Basford, L. R. Offermann, and T. S. Behrend, “Do You See What I See? Perceptions of Gender Microaggressions in the Workplace,” *Psychol. Women Q.*, vol. 38, no. 3, pp. 340–349, Nov. 2013.
- [9] N. F. Sulaiman and H. AlMuftah, “A Qatari perspective on women in the engineering pipeline: an exploratory study,” *Eur. J. Eng. Educ.*, vol. 35, no. 5, pp. 507–517, 2010.
- [10] A. Berrais, “Arab Women in Engineering Education: Current State and Future Perspective,” in *Symposium Female Higher Education: Trends and Perspectives*, 2011.

- [11] A. Powell, B. Bagilhole, and A. Dainty, "How Women Engineers Do and Undo Gender: Consequences for Gender Equality," *Gender, Work & Organization*, vol. 16, no. 4. pp. 411–428, 2009.
- [12] W. Faulkner, "Doing gender in engineering workplace cultures. II. Gender in/authenticity and the in/visibility paradox," *Engineering Studies*, vol. 1, no. 3. pp. 169–189, 2009.
- [13] H. Shen, "Inequality quantified: Mind the gender gap," *Nature*, vol. 495, no. 7439, pp. 22–24, Mar. 2013.
- [14] K. Smith and J. Gayles, "'Girl Power': Gendered Academic and Workplace Experiences of College Women in Engineering," *Social Sciences*, vol. 7, no. 2. p. 11, 2018.
- [15] M. Qayyum, "Women in Middle East/North Africa Are Underrepresented in Science and Technology Professions," *HuffPost*, 29-May-2012. [Online]. Available: https://www.huffingtonpost.com/mehrunisa-qayyum/women-middle-east-technology_b_1553440.html. [Accessed: 04-Feb-2019].