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The impact of knowledge to optimize attitude and behaviour about infertility: Perspectives from students in Morocco

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Sana S.E. EL Adlani[1], Abdelhafid A.B. Benksim[2] amd Mohamed M.C. Cherkaoui[1]*

Pharmacology, Neurobiology, Anthropobiology and Environment, Faculty of Sciences Semlalia, Marrakesh, Morocco[1]; High Institute of Nursing Professions and Health Techniques, Marrakesh, Morocco[2]

***For Correspondence:** Email: *seladlani@gmail.com*; Phone: 00212665355933

Abstract

The aim of this study is to explore knowledge, attitude and behaviour about infertility among young people, to prevent risk factors which should threaten fertility of young people.455 non-medical and medical students participated to this study, by a simple random sampling method. Knowledge state of non-medical group about infertility management was lower than medical group. Participants of non-medical group (p = 0,041) had low knowledge about definition and causes than participants of medical group. 11,5% of female and 10,9% of male of non-medical group opted for Traditional-healer as first solution if treatment fails **,** none of medical group suggested this option. The first advice of respondents of non-medical was polygamy, adoption and divorce (P= 0,001). Respondents of medical (p= 0,038) had proposed to try fertility treatments more than once time if treatment fails. Government should increase efforts to improve knowledge about infertility for all scholar programs. *(Afr J Reprod Health 2024; 28[8]: 22-29).*

Keywords: Infertility, knowledge, attitudes, behaviours, young people

Résumé

Le but de cette étude est d'explorer les connaissances, les attitudes et les comportements concernant l'infertilité chez les jeunes, afin de prévenir les facteurs de risque qui pourraient menacer la fertilité des jeunes. 455 étudiants non-médecins et en médecine ont participé à cette étude, par une simple méthode d'échantillonnage aléatoire. L'état des connaissances du groupe non médical sur la gestion de l'infertilité était inférieur à celui du groupe médical. Les participants du groupe non médical (p = 0,041) avaient une faible connaissance de la définition et des causes par rapport aux participants du groupe médical. 11,5% des femmes et 10,9% des hommes du groupe non médical ont opté pour le guérisseur traditionnel comme première solution en cas d'échec du traitement, aucun membre du groupe médical n'a suggéré cette option. Le premier conseil des répondants non médicaux était la polygamie, l'adoption et le divorce (P= 0,001). Les répondants médicaux (p= 0,038) avaient proposé d'essayer des traitements de fertilité plus d'une fois en cas d'échec du traitement. Le gouvernement devrait redoubler d'efforts pour améliorer les connaissances sur l'infertilité pour tous les programmes universitaires. *(Afr J Reprod Health 2024; 28 [8]: 22-29).*

Mots-clés: Infertilité, connaissances, attitudes, comportements, jeunes

Introduction

The infertility is not a simple reproductive health disease; it is a clearly sociological concept since it affects relationship of couple, family and society[1-2]. Usually, in developing countries, people perception about infertility is associated to cultural norms, traditions and customs[3]. Therefore, important gaps in the current knowledge concerning reproductive health can affect negatively attitudes and behaviors about infertility[3]. The way to optimize awareness about infertility is to identify knowledge level of people and to understand their measures to improve fertility[4-5]. So, it is crucial to increase efforts to improve the knowledge of young people about how to reduce the risk of infertility. In this regard, including fertility promotion, the World Health Organization promoted that it is important to improve both sexual and reproductive health in young people[1]. In most developed countries, various studies proved that it is better promoting fertility knowledge among young people in order to prevent infertility[6-7]. However, a few researches have addressed the infertility knowledge among young people in developing countries. In Middle East, in Baghdad, the results of infertility awareness study showed that it is appropriate to improve knowledge about fertility for university student and all young population[7].

In Morocco, our study among 355 non-medical young people, published in 2021, showed

that both of female and male had a low level knowledge about infertility (only 20, 8% of female and 25, 6% of male were aware)[8]. None others researches were found concerning this topic in Morocco. So, the aim of this study is to describe impact of knowledge on attitude and behaviour of medical and non-medical Moroccan young people concerning infertility.

Methods

Data and measures

This cross-sectional study was based on investigation among students in Marrakech-Safi region of Morocco. Student under study were divided randomly into two groups of study non-medical students and medical student as control group. The first group was non-medical students of Marrakech-Safi region in Morocco and the second one was Medical students from Faculty of medicine and Pharmacy in Cadi Ayyad University Marrakech, Morocco. The participants were selected by a simple random sampling method; during 2019 and 2021. The required sample size was estimated 355 non-medical student aged between 15-18 years and 18 and 24 years (p=0,030) and 100 Medical student aged between 18 and 24 years (p=0,040). They were questioned about their knowledge, attitudes and behaviour concerning infertility, by administering a semi-structured questionnaire with open and close questions in French language. The questionnaire was pretested extensively. The ethical aspects such as self-determination, privacy, anonymity, confidentiality, comfort and equal treatment were respected.

Data analysis

Statistical analyses were performed using Statistical Package for Social Sciences (version 25). After, to reflect the importance to upgrade the level of knowledge of adolescent and young adult about infertility, the answers of Moroccan medical students were confronted to our previous finding among Moroccan non-medical students.

Results

The most important characteristics information distributed by gender of the participants are summarized in Table 1 and Table 2. In this research all participants are Muslim people. The average age of non-medical student were 20,77 for female versus 20,72 for male (p=0,030) and the one of medical student were 20,36 versus 21,62 for male and female respectively (p=0,040). Most of them were from family which had middle-income (non-medical student: 73% of female versus 76,7% of male; medical student: 73% of female versus 83% of male) and 38% of participants were in third year of their medical studies.

Knowledge about infertility

Our finding showed that medical student had high level of knowledge about infertility's definition (61% of female versus 73,7% of male), etiologies (95% of female versus 84% of male) and the impact of lifestyle on reproductive health Tables 3. Beside, both female and male of non-medical students had a low level knowledge about definition and causes of infertility (20, 8% of female versus 25, 6%) (p = 0,041) Table 4. However, the majority of non-medical students (92% of female and 84, 5% of male) had confirmed that the life style is a factor that may affect fertility of couple.

Group of control (medical students: 66,7% of female versus 21% of male) reported that it is possible to treat primary or secondary infertility, but none of them affirmed that treatment could be successful on 100%. On the other hand, the majority of non-medical students affirmed the opposite of those responses. Concerning infertility management on primary health, minority of non-medical students and medical students cited the primary investigation among infertile couple (Table3 and Table 4).

At least, the main sources of information available respondents of non-medical students were Internet or, media. Concerning medical students**,** 53% of participants had their knowledge

Table 1: Characteristics information of non-medical students distributed by gender

Variables and modalities	Female (n=226) %	Male (n=129) %	Pvalue
Age of youths (years)	20,77± 2,2	20,72 ± 2,9	0,10
Group age			
15-18Y	14,2	23,3	0,030
18-24 Y	85,8	76,7	
Education level			
Primary school	3,5	10,1	0,001
College	7,5	17,8	
High school	88,9	72,1	
Parental socioeconomic status			
Low-income	19,9	20,2	0,292
With Middle-income	73,0	76,7	
With high-income	7,1	3,1	

Statistical significance at p<0,05

Table 2: Characteristics information of medical students distributed by gender

Variables and modalities	Female (N=81) %	Male (N'= 19) %	P value
Average age (years)	21,62	20,36	0,040
Year of study			
First year	11	21	
Second year	17	31	
Third year	23	16	
Fourth year	10	01	0,318
Fifth year	21	21	
Sixth tear	10	10	
Seventh year	08	00	
Parental socioeconomic status			
high-income	05	02	
Middle-income	73	83	0,069
Low-income	22	15	

Statistical significance at p<0,05

from medical university (59% of female versus 16% of male) (p=0,038) or health professional (25% of female versus 30% of male).

Attitudes and behavior about infertility

In this section, the finding shows slight difference between participants of non-medical and medical students about responsibility of infertility (Table 5). In this sense, none of female of non-medical and medical students affirmed that infertility only women's problem, but, 7,75% of male in non-medical students (p=0,057) versus 1% of male in medical students (p=0.038) thought the opposite. Moreover, the majority of respondents in medical students (81% of female versus 95%) (p=0,038) added that both woman and man must consult in first time if couple is infertility.

The majority of participants of non-medical students (p=0.056) and medical students (p=0,027) mentioned that infertility is a god's will. However, 82,3% of female versus 79,1% of male in non-medical students proposed to consult family doctor as a first resort if they would be infertile; nevertheless, 63% of female versus 52% of male in medical students preferred to have gynecologist advice in first. Minor proportion of non-medical students (11,5% of female versus 10,9% of male) accepted Traditional-healer as first solution for infertility whereas none of respondents of medical students (p=0,008) proposed this choice.

Table 3: The infertility knowledge among medical student Distributed by gender

Variables and modalities	Female(n=81) % Yes/No	Male (n'=19) % Yes/No	P value
Definition of infertility			
Correct	61	73,7	
Incomplete	33	21,3	0,107
Incorrect	02	00	
I don't know	04	05	
Infertility causes			
Correct	95	84	
Incomplete	00	01	0,096
Incorrect	05	15	
I don't know	00	00	
Type of Infertility			
Correct	66,7	21%	
Incorrect	20,8	42	0,138
I don't know	12,5	37	
Difference between infertility and sterility			
Correct	55	47,3	
Incorrect	28	10,5	0,058
I don't know	17	42,2	
Who should consult in first, if the couple would be infertile	00	05	
Woman	00	00	0,038
Couple	81	95	
You don't know	19	00	
Infertility treatment			
Successful on 100%	00	00	
Relative	62	58	0,113
I don't know	38	42	
Infertility primary investigation			
Correct	05	00	
Incorrect	50	47,3	0,062
I don't know	45	52,7	
Medical assisted treatment need psychological assistance	78	18	0,758
Sources of information about infertility :			
University curriculum	59	16	0,013
Media/Internet	06	47	0,038
Campaigns of sensitization	05	04	0,271
Health professional	25	30	0,113
Parents	05	03	0,271

Statistical significance at p<0, 05

About alternative if treatment fails, only 14,6% of female and 11,6% of male in non-medical students versus 53% of female and 50% of male in medical students affirmed that they opt for retrying different treatments if initial treatment fails.

Adoption as alternative was the choice of 75,2% of female versus 62,8% male of non-medical students and 42% of female and 47% of male in medical students. Even minority of participants of non-medical students (p=0,001) suggested divorce or polygamy as solution if treatment fails, none of participants of medical students proposed this alternative (p=0,038).

All participants of non-medical students and medical students concluded that infertility influences negatively the life of couples. So, they cited the following domain of life influenced by infertility: (a) psychological state of partners; (b)

Table 4: The infertility knowledge of non-medical student Distributed by gender

Variables and modalities	Female (n=226) % Yes/No	Male (n=129) % Yes/No	P value
Definition of Infertility	20,8	25,6	0.041
Infertility is a problem for only women?	0.0	7.75	0.057
Infertility is 100% curable?	94.7	92.2	0.359
Have you ever met an infertile couple?	61.1	46.5	0.008
Lifestyle is cause infertility?	92.0	86.0	0.072
What is the best age for getting pregnant?	28,8	10,9	
20 to 24 years	91.2	89.1	0.672
>= 25 years			
Female infertility is caused by?	35.0	38.8	
Genital infections	23.5	16,3	0,474
Uterine abnormalities	54.9	48.06	0,110
Hormonal Problems	34,1	27,9	0,400
Menstrual disorders	34,5	23,3	0,230
Tubal diseases			0.027
Male infertility is caused by?			
Sperm anomalies	50,0	41,9	0,139
Hormone disorders	22.5	25.5	0.666
Other diseases	49,6	51,9	0.221

Statistical significance at p<0, 05

Table 5: The hypothetical answers of participants regarding possible future infertility Distributed by gender

Variables and modalities	Medical students Female (n=81) Yes/No %	Male (n'=19) Yes/No %	P value	Non-Medical students Female (n=226) Yes/No %	Male (n'=129) Yes/No %	P value
If you had a baby once, is it easier to conceive?	26	03	0,657	41.6	51.9	0.063
Infertility is a god's will?	73	70	0.056	92.0	84.5	0.027
What is the first resort, if you would be infertile?						
Family doctor	37	48		82,3	79,1	
Gynecologist	63	52	0,008	0,9	3,9	0.170
Traditional-healer	00	00		11,5	10,9	
When the fertility treatment fails?						
Would you consider divorce?	00	00	0,038	3,5	3,1	0.001
Would you consider adoption?	42	47		75,2	62,8	
Should you consider remarriage?	00	00		6,6	22,5	
Would you try other treatment options?	53	50		14,6	11,6	
You don't Know?	05	03		00	00	

Statistical significance at p<0, 05

sexuality of couple; (c) relations ships with friends and family and (d) work performance. It is crucial to add that all participants of medical students suggested psychological assisted during treatment as holistic approach among infertile couples.

Discussion

In order to prove the importance of investigation on a public awareness to prevent fertility disorders among Moroccan young population, this section

provides knowledge level of two groups: non-medical students and medical student. The results were also confronted to demonstrate the difference attitudes and behaviour about infertility between both of groups.

It seems interesting to mention that both of non-medical students and medical students were Muslim people, most of them were from family which had middle-income, majority were from urban origin and average age of non-medical students (20,77 years for female and 20,72 years for man; p=0,030) and medical students (21,62 years for female and 20,36 years for male; p=0,040).

Knowledge of medical versus non-medical students

In general, independent of gender, medical students had higher level knowledge about infertility than non-medical students. This finding corroborates with a review of literature[7-11]. Both non-medical and medical students were highest awareness about the impact of life style on fertility. But, there is significantly difference between non-medical and medical students about infertility definition and etiologies, unlike the respondents of medical students, few of non-medical participants (p=0,041) had knowledge about these topics. Although panoply of studies has shown similar results in both developed and in developing countries like England, Germany, Sweden, Australia, Saudi Arabia and Iraq[3-7-12-13-14-15]. However, in developing countries several and important gaps about knowledge of causes of infertility appeared among young people, due to lacks in education about primary prevention of sexual and reproductive health[14]. Concerning the treatment of infertility, non-medical students (94,7% of female and 92,2% of male) thought and believed that treatment of infertility can be successful on 100%. Though, none of medical participants reported this fact. This result is in contrast with finding of other studies[7-9-14-16], usually medical students overestimate the success rate of procreation medical assistance and on the other hand, non-medical students underestimate it. Merely 5% of female and none of male in medical students correctly cited the procedure of primary investigation for infertile couple, while all non-medical participants asked more clarifications of the meaning of primary investigation. Moreover, the proportion of medical student reported the procedure of infertility investigation were the sixth and seventh years students. So, the medical students had developed better knowledge about infertility according to be advanced in their studies[12].

Medical and non-medical participants were asked about the source of their infertility knowledge. The most of the participants with medical backgrounds affirmed that their information was from university curriculum in first. Whereas, all participants without medical background reported that their only source was Medias/Internet. In general, in the worldwide books and Internet/Medias were the most frequent sources of information concerning infertility[13]. All those studies highlight the importance of education about infertility via primary care. Swedish study concluded that youth centers and medical workers (doctors and midwives) may be the best solution to improve the infertility education among young people[14].

Attitude of medical versus non-medical students

Like non-medical young people, the majority of medical students believed that infertility is God's well. However, all non-medical participants thought that the first resort for infertile couple is prayer, while none of medical students preferred this option and they opted for trying different treatments. Also, 11,5% of female and 10,9% of male in non-medical group opted for Traditional-healer as first solution if treatment fails, contrary of medical participants, none of them suggested this option. Same finding were found in studies conducted among people in Iranian college, Grenada and Iraqi Universities[9-14]. Those studies affirmed that non-medical young people believed in God and illusory causes of infertility especially in African countries. It seems also that medical students in worldwide had positive attitude about Assisted Reproductive Technology (ART)[18]. It is evident that cultures and ritual religion could affect knowledge and attitude about reproductive health. In developing world, infertile couple can lead to divorce and polygamy, trying to escape the stigmatization[3]. For example, in Ghana and Nigeria couples suffer from psychological distress due to marital tension, criticism from relatives and stigmatization from community, so as consequence

extramarital relation, remarriage and divorce[17-19-20]. In our studies, the adoption and polygamy were the alternatives for non-medical young people if the treatment fails, but medical students preferred retrying ART before thinking about adoption.

The socio-economic constraints, stress of infertility management and all the factors mentioned above had psychological consequences like pain, anxiety, culpability, lack of self-esteem[20-21]. All medical students in our study were aware about of accompanying psychological measures. They affirmed that the best way of coping with infertility situation, treatment and to deal with depression is providing a psychological assistant for infertile couple.

Conclusion

Several factors had a higher impact on infertility awareness of young people like culture, religion, choice of university, gender and life style. Even, various investigations conducted the same study in developed and in developing countries, no studies were founded concerning this topic in the north of Africa in general and particularly in Morocco. The data of this study can be useful to promote infertility awareness among young people. Education programs and community support groups should increase knowledge about male and female reproductive system, sexual education, puberty, menopause and reproductive disease. Government should be aware about the importance of providing comprehensive reproductive health counseling in primary prevention care and in educational health campaigns to young people in Morocco. Moreover, it curial to ensure that young people use optimally the information promoting tailoring which could help integration of fertility health information**.**

Limitations

The sample for our investigation comprises two main groups: Medical and Non-Medical students. Within the Non-Medical category, there are two subgroups: the first consists of students aged between 15-18 years old with a secondary level of study, while the second comprises students aged between 18-24 years old with a university-level study background.

The inclusion of the first category presents a limitation to our study. However, we chose to include it to underscore the importance of integrating knowledge about infertility into all school programs. Additionally, we aim to foster reflexivity and promote awareness of infertility among this younger people.

Contribution of authors

SE contributed to study planning, conception, questionnaire development, data collection and editing of the manuscript. SE and AB contributed to development of research design, data collection and the editing manuscript. SE, AB, MC contributed to analysis and interpretation of data. The draft of the manuscript was revised by AB and MC. All authors read and approved the final manuscript.

Availability of data and material

The data and analysis of this research are available in case a request is made to corresponding author

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Ethics approval and consent to participate

Our study was approved by Cadi Ayyad University in Marrakesh Morocco. We had also the authorization from Health authority of the region Marrakesh-Safi. The consent was obtained from the participants. The committee's reference number is not applicable

Competing interest

All authors have none to declare

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