

Knowledge and practice of university students in Lebanon regarding contraception

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معارف طلبة الجامعات في لبنان وممارساتهم حول منع الحمل
برناديت بربور، باسكال سلامة

الخلاصة: تم تقييم المعارف والممارسات لدى طلبة الجامعات في لبنان حول منع الحمل، في دراسة مستعرضة ومقارنة حول الطلاب في الجامعات الخاصة والعامة، واستخدمت لذلك استمارة تستكمل ذاتياً باللغة العربية. وصرّح معظم الذكور 73.3٪ منهم وقليل من الإناث (21.8) بأنه كانت لهم علاقات جنسية سابقة، وقد استخدم معظم الذكور 86.1٪ العازل الذكري، في حين لم تستخدم الإناث بشكل عام 75.6٪ أيّاً من مانعات الحمل.

ABSTRACT We evaluated knowledge and practice of Lebanese university students regarding contraception in a cross-sectional, comparative study on students in public and private universities using an Arabic language self-administered questionnaire. We found low levels of knowledge of contraception. The majority of males (73.3%) and a few females (21.8%) declared previous sexual relations: the majority of males had used a condom (86.1%), but females had generally not used contraceptives (75.6%).

Connaissances et pratiques en matière de contraception des étudiants libanais

RÉSUMÉ Nous avons évalué les connaissances et les pratiques en matière de contraception des étudiants libanais dans le cadre d'une étude transversale comparative réalisée auprès d'étudiants d'universités publiques et privées sur la base d'un questionnaire en langue arabe à remplir soi-même. Le niveau des connaissances était faible. La majorité des garçons (73,3 %) et peu de filles (21,8 %) ont déclaré avoir déjà eu des rapports sexuels : la majorité des garçons avaient utilisé un préservatif (86,1 %), mais les filles n'avaient généralement pas utilisé de contraceptifs (75,6 %).

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Introduction

Public health policies and programmes are nowadays focusing on the sexual and reproductive health needs of adolescents, particularly in the developing world [1]. Adolescents are not always rational when making sexual choices: being deeply involved in their own bodily perceptions, strong emotions and feelings of ambivalence may override the perception of risk [2], despite the fact that attitude towards behaviour generally reflects an individual's beliefs and consequences associated with engaging in the behaviour [3]. Thus, sexual habits, contraceptive use and sexually transmitted disease (STD) rank among the most important health issues for adolescents and young adults. In addition, early sexual activity is associated with risky behaviours such as smoking, alcohol use, multiple sexual partners and unintended pregnancy [4]. Emerging research suggests that teenagers make decisions about contraceptive use in the context of individual sexual relationships [5]. Different beliefs in males and females may also affect contraceptive use and need to be explored to develop sex education and services for this age group [6].

Media and friends, not health professionals, have been reported as the primary sources of information for young women and men of all ages [7]. Hence, inadequate information is expected in youngsters. For example, in a study on Ghanaian youth, nearly all respondents (99%) knew of condoms but less than half (48%) could identify any of 4 elements of correct use; females and sexually inexperienced youth were the least informed [8]. In a representative sample of individuals aged 16–45 years in Greece, only a small percentage of the respondents were able to answer correctly 50% or more of the questions on knowledge of basic contraceptive issues (30.6% of women and

14.7% of men), although the majority of respondents considered themselves at least adequately informed [7].

Lebanon is a developing country with conservative norms, particularly for girls, and little information exists regarding contraception. Nevertheless, there are actual changes in social, cultural and moral norms, with large discrepancies between religions. These changes seem to exert a considerable effect on the country's young adult population. It is generally observed that young people tend to engage in sexual activity at younger ages than before; the use of contraception in these settings is largely unknown. This study, therefore, aimed to evaluate knowledge, attitudes and practices of Lebanese university students regarding contraception, in a comparative analysis between males and females.

Methods

This was a cross-sectional comparative study. The sampling frame was a list of departments of all public and private universities in Lebanon, from which a random sample of 15 was drawn up. In the public university (Lebanese University) we sampled the faculties of arts, law and political sciences, public health, engineering, information and documentation, social sciences, literature and humanities, and sciences. The private universities selected were Kaslik Holy Spirit University, Saint Joseph University (Uvelain campus), American University of Science & Technology (Achrafieh campus), Notre Dame University (Loueizeh campus), Beirut Arab University, American University of Beirut and Balamand University (Tripoli campus).

Campus administrators were contacted and permission was given to enquirers to distribute questionnaires in all but the Amer-

ican University of Beirut campus, where permission to participate in the study was refused. A convenience sample of available students was chosen to participate to the study: a lay enquirer was sent to spend the day on campus and distribute a minimum of 100 questionnaires per campus. Students were approached during recess hours. Exclusion criteria were being married or of non-Lebanese nationality.

A self-administered standardized questionnaire was used, to be completed in the local Arabic language on campus. Closed and open-ended questions were asked. The questionnaire was based on current knowledge of available contraceptives and STDs; information collected was similar to that gathered by other authors [7–9]. It was divided into 5 parts: social and demographic characteristics; knowledge regarding commonly used contraceptives; knowledge regarding the menstrual cycle and natural fertility regulation; practices regarding contraceptive use and failure; and knowledge about STDs. The questionnaire was pilot-tested on 10 young individuals aged 18–22 years for correcting or clarifying questions when necessary.

The study was carried out between April 2005 and June 2005. Students gave oral consent to participate to the study, after explaining that it was a “study done by university researchers that had extreme importance for their health” and ensuring anonymity (no names were required). To ensure maximum objectivity in students’ answers, enquirers were instructed not to give any additional clarification for questions which were not understood.

Questionnaires were coded and data entered on *SPSS*, version 12.0, by independent lay persons. Data entry was then controlled, and data analysed using the same software. P -value < 0.05 was considered significant. Missing values, which accounted for $< 20\%$

of answers, were not replaced, and variables were analysed as available. The chi-squared test was used for comparison between categorical variables. Analysis of variance was used to compare means of continuous variables.

Results

We distributed 2000 questionnaires and 1410 (70.5%) were returned. There were some differences in the social and demographic characteristics of the male and female respondents: there were more female respondents from public universities ($P < 0.0001$), more Christians ($P < 0.002$) and more people living in Mount Lebanon ($P < 0.02$). Males were slightly, but statistically significantly, older than females ($P < 0.0001$). No statistically significant differences were noted for study year or region of origin ($P > 0.05$) (Table 1).

Knowledge regarding contraceptives

Books (57.5%), friends (56.2%) and school (52.0%) were the most cited sources of information on sex (Table 2). No respondent cited any health professional.

All males knew about the condom, but 2.8% of females had never heard of it ($P < 0.0001$). Males knew more about the conditions of use, contraindications and side-effects of condoms ($P < 0.0001$). Only half the male respondents regularly verified the expiry date before using a condom and knew when to put it on, while less than one-third knew when to remove it (Table 3).

Three-quarters of males had heard about the intrauterine device (IUD) in comparison with 88.6% of females ($P < 0.0001$). One-third of respondents thought that an IUD was placed in the vagina, 10.7% thought it could be used by any woman, and 15.0% did not know how it is used. Significantly

Table 1 Social and demographic characteristics of participants

Characteristic	Males (n = 505)		Females (n = 905)		P-value	Total (n = 1410)	
	No.	%	No.	%		No.	%
<i>University</i>							
Public	290	57.4	707	78.1	< 0.0001	997	70.7
Private	215	42.6	198	21.9		413	29.3
<i>Study year</i>							
Undergraduate	395	78.2	742	82.0	0.17	1137	80.6
Graduate	88	17.4	131	14.5		219	15.5
Postgraduate	6	1.2	18	2.0		24	1.7
<i>Region of origin</i>							
Beirut	68	13.5	92	10.2	0.09	160	11.3
Mount Lebanon	204	40.4	407	45.0		611	43.3
Other	233	46.1	406	44.9		639	45.3
<i>Residence</i>							
Beirut	85	16.8	108	11.9	0.02	193	13.7
Mount Lebanon	351	69.5	689	76.1		1040	73.8
Other	69	13.7	108	11.9		177	12.6
<i>Religion</i>							
Christian	390	77.2	764	84.4	0.002	1154	81.8
Muslim	49	9.7	68	7.5		117	8.3
No answer	66	13.1	73	8.1		139	9.9
<i>Mean (SD) age (years)</i>	21.0 (1.9)		20.3 (1.6)		< 0.0001	20.6 (1.8)	

SD = standard deviation.

more females than males knew that IUDs have side-effects and contraindications ($P < 0.0001$) (Table 3).

About half the respondents had ever heard about the cervical cap, significantly more females than males ($P < 0.0001$). The majority of these, however, did not know how it is used, and more than 80% did not

know if it has side-effects or how long it should be left in place. Similar findings applied to the vaginal diaphragm (Table 3).

Almost all females (97.9%) and males (88.1%) declared knowing about oral contraception (Table 4). However, about half the responding males and a third of the females did not know how frequently pills are used ($P < 0.003$). Just over half the students stated they did not know what to do in the case of a forgotten dose. More females than males were aware of the existence of side-effects and contraindications for oral contraceptives ($P < 0.0001$) (Table 4).

Two-thirds of respondents declared knowing about spermicidal products, but the majority of females did not know how they are used or the side-effects ($P < 0.0001$). Even males who declared that they knew how to use them had erroneous information (Table 4).

Table 2 Stated source of sexual education for university students in Lebanon

Source of information	No. (n = 1410)	%
Books	811	57.5
Friends	792	56.2
School	733	52.0
Mass media	541	38.4
Parents	420	29.8
Partners	378	26.8
University	283	20.1

Table 3 Knowledge of students regarding mechanical contraceptives

Type of contraceptive & knowledge item	Males (n = 505)		Females (n = 905)		P-value	Total (n = 1410)	
	No.	%	No.	%		No.	%
Male condom							
<i>Declare knowing about it</i>	505	100	880	97.2	< 0.0001	1385	98.2
<i>Never used it</i>	46	9.1	481	54.7		527	38.1
<i>Is disposable</i>	248	49.1	418	47.5	0.94	666	48.1
<i>Necessary to verify expiry date</i>	472	93.5	816	92.7	0.09	1288	93.0
<i>Is used</i>							
On erect penis	441	87.3	749	85.1	0.87	1190	85.9
At the beginning of erection	269	53.3	260	29.5	< 0.0001	529	38.2
Just before ejaculation	39	7.7	47	5.3	0.10	86	6.2
Do not know	20	4.0	271	30.8	< 0.0001	291	21.0
<i>Is removed</i>							
While penis still erect	149	29.5	85	9.4	< 0.0001	234	16.9
On detumescence	304	60.2	376	42.7	< 0.0001	680	49.1
Do not know when to remove	44	8.7	373	41.2	< 0.0001	417	30.1
<i>Verifies expiry date</i>							
Always	284	56.2	237	26.9	< 0.0001	521	37.6
Sometimes	126	25.0	78	8.9		204	14.7
Never	44	8.7	33	3.8		77	5.6
<i>Contraindications?</i>							
Yes	106	21.0	165	18.8	< 0.0001	271	19.6
No	214	42.4	200	22.7		414	29.9
Do not know	176	34.9	477	54.2		653	47.1
<i>Side-effects?</i>							
Yes	82	16.2	121	13.8	< 0.0001	203	14.7
No	238	47.1	251	28.5		489	35.3
Do not know	169	33.5	455	51.7		624	45.1
Intrauterine device							
<i>Declares knowing about it</i>	366	72.5	802	88.6	< 0.0001	1168	82.8
<i>Is placed in the uterus</i>	134	36.6	390	48.6	< 0.0001	524	44.9
<i>Is in place for a long time</i>	100	27.3	330	41.1	< 0.0001	430	36.8
<i>Is placed in the vagina</i>	132	36.1	247	30.8	0.08	379	32.4
<i>Can be used by any woman</i>	43	11.7	82	10.2	0.42	125	10.7
<i>Is used before every intercourse</i>	30	8.2	27	3.4	< 0.0001	57	4.9
<i>Is placed during menstruation</i>	20	5.5	30	3.7	0.18	50	4.3
<i>Does not know how it is used</i>	58	15.8	117	14.6	0.57	175	15.0
<i>Side-effects?</i>							
Yes	118	32.2	410	51.1	< 0.0001	528	45.2
No	64	17.5	89	11.1		153	13.1
Do not know	173	47.3	291	36.3		464	39.7

Table 3 Knowledge of students regarding mechanical contraceptives (concluded)

Type of contraceptive & knowledge item	Males (n = 505)		Females (n = 905)		P-value	Total (n = 1410)	
	No.	%	No.	%		No.	%
Contraindications?							
Yes	58	15.8	250	31.2	< 0.0001	308	26.4
No	55	15.0	460	57.4		515	44.1
Do not know	231	63.1	58	7.2		289	24.7
Cervical cap							
Declares knowing about it	233	46.1	544	60.1	< 0.0001	777	55.1
Is disposable	40	17.2	82	15.1	0.48	122	15.7
Changed after every intercourse	31	13.3	81	14.9	0.55	112	14.4
Is used with a spermicide	30	12.9	59	10.8	0.43	89	11.5
Is washable	40	17.2	44	8.1	< 0.0001	84	10.8
Does not know about use	126	54.1	361	66.4	0.001	487	62.7
Side-effects?							
Yes	25	10.7	53	9.7	0.01	78	10.0
No	31	13.3	38	7.0		69	8.9
Do not know	161	69.1	432	79.4		593	76.3
Can be left in place for							
2 days	44	18.9	59	10.8	0.003	103	13.3
1 week	21	9.0	17	3.1	0.001	38	4.9
1 month	13	5.6	13	2.4	0.025	26	3.3
Do not know	146	62.7	421	77.4	< 0.0001	567	73.0
Vaginal diaphragm							
Declares knowing about it	262	51.9	583	64.4	< 0.0001	845	59.9
Is disposable	55	21.0	144	24.7	0.24	199	23.6
Changed after every intercourse	51	19.5	116	19.9	0.88	167	19.8
Is used with a spermicide	53	20.2	108	18.5	0.57	161	19.1
Is washable	48	18.3	46	7.9	< 0.0001	94	11.1
Does not know about its use	103	39.3	323	55.4	< 0.0001	426	50.4
Side-effects?							
Yes	30	11.5	80	13.7	< 0.0001	110	13.0
No	47	17.9	45	7.7		92	10.9
Do not know	166	63.4	437	75.0		603	71.4

Details about contraceptive type were filled in only by those who declared knowing about the contraceptive in question; percentages were calculated accordingly.

Some totals < 100% because of missing values.

Knowledge about sexually transmitted diseases

More females than males knew about STDs ($P < 0.0001$), but more females than males stated they did not know how to prevent them. About 80% thought that the use of condoms may prevent STDs, while others cited erroneous measures (Table 5).

Knowledge regarding menstrual cycle and natural fertility regulation

We found low levels of knowledge in both male and female respondents regarding the menstrual cycle and natural fertility regulation (Table 6). The majority, males in particular, did not know what the menstrual cycle is, when ovulation occurs or when ab-

Table 4 Knowledge of students regarding chemical contraceptives

Type of contraceptive & knowledge item	Males (n = 505)		Females (n = 905)		P-value	Total (n = 1410)	
	No.	%	No.	%		No.	%
Oral contraceptive							
<i>Declares knowing about it</i>	445	88.1	886	97.9	< 0.0001	1331	94.4
<i>Necessary to verify expiry date</i>	417	93.7	855	96.5	0.03	1272	95.6
<i>Frequency of use</i>							
1st–21st day of cycle	88	19.8	255	28.8	0.003	343	25.8
Every day	71	16.0	167	18.8	0.46	238	17.9
5th–25th day of cycle	52	11.7	159	17.9	0.01	211	15.9
At a fixed hour	47	10.6	176	19.9	< 0.0001	223	16.8
Do not know about use	181	40.7	311	35.1	0.003	492	37.0
<i>In case of forgetting one tablet</i>							
Skip the forgotten tablet	64	14.4	162	18.3	0.25	226	17.0
Take forgotten tablet soon	38	8.5	115	13.0	0.06	153	11.5
Take both tablets together	26	5.8	91	10.3	0.02	117	8.8
Do not know what to do	267	60.0	489	55.2	< 0.0001	756	56.8
<i>Are there several types of pill?</i>							
Yes	139	31.2	453	51.1	< 0.0001	592	44.5
No	25	5.6	39	4.4		64	4.8
Do not know	251	56.4	378	42.7		629	47.3
<i>Cannot be used at all ages</i>							
	173	38.9	372	42.0	< 0.0001	545	40.9
<i>Cannot be used by all women</i>							
	212	47.6	549	62.0	< 0.0001	761	57.2
<i>Side-effects?</i>							
Yes	181	40.7	537	60.6	< 0.0001	718	53.9
No	30	6.7	43	4.9		73	5.5
Do not know	188	42.2	276	31.1		464	34.9
Spermicide							
<i>Declares knowing about it</i>	319	63.2	598	66.1	0.42	917	65.0
<i>How used</i>							
15 min before intercourse	91	28.5	88	14.7	< 0.0001	179	19.5
Just before intercourse	53	16.6	91	15.2	0.57	144	15.7
2 h before intercourse	61	19.1	34	5.7	< 0.0001	95	10.4
After ejaculation	10	3.1	7	1.2	0.04	17	1.9
In the vagina	63	19.7	98	16.4	0.20	161	17.6
On external genitalia	35	11.0	70	11.7	0.75	105	11.5
Do not know	93	29.2	345	57.7	< 0.0001	438	47.8
<i>After use, the woman can wash</i>							
20 minutes after intercourse	73	22.9	100	16.7	0.001	173	18.9
2 hours after intercourse	47	14.7	57	9.5		104	11.3
6 hours after intercourse	20	6.3	33	5.5		53	5.8
Do not know when	158	49.5	387	64.7		545	59.4
<i>Side-effects?</i>							
Yes	56	17.6	81	13.5	< 0.0001	137	14.9
No	57	17.9	42	7.0		99	10.8
Do not know	190	59.6	454	75.9		644	70.2

*Details about contraceptive type were filled in only by those who declared knowing about the contraceptive in question; percentages were calculated accordingly.
Some totals < 100% because of missing values.*

Table 5 Knowledge of university students in Lebanon regarding prevention of sexually transmitted disease (STD)

Variable	Boys (n = 505)		Girls (n = 905)	
	No.	%	No.	%
Knows about STD ^a	459	90.8	872	96.4
STDs prevented by:				
Intimate washing	67	13.3	149	16.5
Condoms	417	82.5	715	79.0
Spermicides	53	10.4	81	8.9
Coitus interruptus	38	7.6	60	6.6
Sexual intercourse without penetration	65	12.8	132	14.6
Do not know how to prevent ^a	33	6.6	125	13.8

^aSignificant at $P < 0.0001$.

stinence should be practised for natural fertility regulation ($P < 0.05$ for all). However, the majority of females declared they knew about the Ogino–Knauss (rhythm), Billings and temperature methods, although their knowledge lacked precision in most cases.

Practices regarding sexual habits and contraception

We found that 135 (26.7%) males and 708 (78.2%) females declared never having had a sexual relationship. Of those who had, around two-thirds of males and a quarter of females had used contraception, mainly the condom for males (86.1%) and oral contraceptives for females (56.3%) (Table 7).

Sexual intercourse occurred most often at home in the absence of parents (54.3%) or in a beach chalet (49.6%) (Table 6). In sexually active individuals, about 48% of males and 60% of females had ever had sexual relationships without using a contraceptive; the chief declared reason was extra-vaginal intercourse. Nevertheless, 34% of all respondents thought that intercourse without penetration could lead to pregnancy.

The majority of those who had sexual experience would not seek help from health professionals for contraception; however, females who would stated they would mainly ask a gynaecologist and males a pharmacist. Half of all sexually active individuals would opt for an abortion if pregnancy occurred, and a quarter would use the morning after pill (Table 7).

Discussion

In this study, we found a low level of knowledge of contraception. We had expected a higher level of knowledge in this educated group of the Lebanese population. Greater knowledge of contraceptive issues was found among the better-educated women and men in Greece [7]. Our sample also revealed low use of contraceptive methods, particularly for females. This is in contrast to a study conducted in Brazil among 952 university undergraduates aged up to 24 years, where contraceptive use was high, especially for condoms and the pill [9]. Accordingly, in young Lebanese having a lower education, we would anticipate much lower levels of knowledge and use of contraception: this accounts for the urgency of the problem in Lebanese society.

Sources of sexual information were mainly friends, books, school and mass media, with 0% for health professionals. The mass media are known to shape attitudes and beliefs in young people [10], and it is becoming more accessible to Lebanese youth. In addition to printed media, there is high access to material on the Internet and television [10]. Furthermore, friends play a critical role in the sexual behaviours of adolescents [11]. This source of information is expected to be of low quality [7].

In our study, the majority of males and a very few females declared having had sex-

Table 6 Knowledge regarding menstrual cycle and regulation of natural fertility

Question	Males (n = 505)		Females (n = 905)		P-value	Total (n = 1410)	
	No.	%	No.	%		No.	%
Ogino-Knauss method							
<i>Declares knowing about it</i>	333	65.9	732	80.9	< 0.0001	1065	75.5
<i>Menstrual cycle is from:</i>							
1st day of menses to 1st day of next menses	117	35.1	407	55.6	< 0.0001	524	49.2
Last day of menses to 1st day of next menses	66	19.8	153	20.9		219	20.6
1st day of menses to last day of next menses	40	12.0	39	5.3		79	7.4
Do not know	91	27.3	101	13.8		192	18.0
<i>Ovulation occurs::</i>							
14 days after menses	113	33.9	322	44.0	0.003	435	40.8
14 days before menses	76	22.8	228	31.1	0.007	304	28.5
In general, at the mid cycle	89	26.7	176	24.0	0.31	265	24.9
It varies with women	27	8.1	48	6.6	0.34	75	7.0
During menstruation	14	4.3	15	2.0	0.04	29	2.7
Do not know	64	19.2	62	8.5	< 0.0001	126	11.8
<i>Abstinence should be practised:</i>							
On the day of ovulation	56	16.8	144	19.7	0.24	200	18.8
One week before menses	37	11.1	61	8.3	0.16	98	9.2
One week after menses	46	13.8	51	7.0	< 0.0001	97	9.1
1 week around ovulation	71	21.3	313	42.8	< 0.0001	384	36.1
Do not know	127	38.1	207	28.3	0.002	334	31.4
Billings method							
<i>Declares knowing about it</i>	251	49.7	611	67.5	< 0.0001	862	61.1
<i>Cervical secretions are:</i>							
Abundant during ovulation	66	26.3	314	51.4	< 0.0001	380	44.1
Abundant away from ovulation	30	12.0	67	11.0	0.67	97	11.3
Transparent during ovulation	56	22.3	163	26.7	0.19	219	25.4
Transparent away from ovulation	34	13.5	87	14.2	0.80	121	14.0
Elastic during ovulation	40	15.9	207	33.9	< 0.0001	247	28.7
Elastic away from ovulation	14	5.6	50	8.2	0.19	64	7.4
Do not know	96	38.2	149	24.4	< 0.0001	245	28.4

Table 6 Knowledge regarding menstrual cycle and regulation of natural fertility (concluded)

Question	Males (n = 505)		Females (n = 905)		P-value	Total (n = 1410)	
	No.	%	No.	%		No.	%
Temperature method							
<i>Declares knowing about it</i>	285	56.4	656	72.5	< 0.0001	941	66.7
<i>Temperature taken:</i>							
Before getting up in morning	139	48.8	448	68.3	< 0.0001	587	62.4
Any time of the day	55	19.3	65	9.9	< 0.0001	120	12.8
Always by same route	72	25.3	239	36.4	0.001	311	33.0
With same thermometer	74	26.0	222	33.8	0.02	296	31.5
Is higher after ovulation	106	37.2	309	47.1	0.006	415	44.1
Is lower after ovulation	30	10.5	101	15.4	0.05	131	13.9
Coitus interruptus							
<i>Declares knowing about it</i>	354	70.1	612	67.6	0.25	966	68.5
<i>Ejaculation away from vulva</i>	246	69.5	409	66.8	0.35	655	67.8

Details about contraceptive type were filled in only by those who declared knowing about the contraceptive in question; percentages were calculated accordingly.

Some totals < 100% because of missing values.

ual relations. The reasons for the difference may include differences in socioeconomic status in the sample, since it is constituted of more females from public universities, and lower socioeconomic status is associated with higher religiosity in young Lebanese adults [12]. Differences between males and females in religiosity or inequity in sexual experiences in the view of society are also possible. Religiosity is known to affect sexual behaviour, with more frequent attendance at religious services and stronger religious beliefs associated with delaying sexual initiation [5,13]. Indeed, Lebanese females are particularly religious [12], and the Lebanese society encourages sexual experience for males but prohibits it for females.

With these reported low levels of knowledge, systematic and responsible education in the promotion of good reproductive health is very important in Lebanon. Policy-makers should recognize the importance of designing interventions that give adolescents the skills they need to feel effective in

their ability to communicate about sex and contraception [14]. Although family planning efforts have generally been conducted through public facilities, some countries are now placing a significant emphasis on private channels of delivery [10], focusing work on fostering youngsters' identities and promoting their ability to take care of themselves [3]. Findings in conservative societies have even shown the normative influence of parents, older family members and extended family members, even in sexual decision-making [2]. Accordingly, prevention approaches should concentrate on providing information and motivation for abstinence or safer sex [15].

Lebanese students have cited having sex mainly in the absence of their parents. However, there is an association between the amount of unsupervised time and sexual behaviours, with STD rates suggestive of particularly risky sexual behaviours [16]. As youths come of age, parents probably believe that it is appropriate to leave them increasingly on their own. However, parents

Table 7 Practices regarding sexual habits and contraception

Question ^a	Males (n = 505)		Females (n = 905)		P-value	Total (n = 1410)	
	No.	%	No.	%		No.	%
<i>Already had sexual relations</i>							
No, never	135	26.7	708	78.2	< 0.0001	843	59.8
Yes, with vaginal penetration	241	47.7	63	7.0	< 0.0001	304	21.6
<i>Already used contraception^b</i>							
Yes, without penetration	237	64.1	48	24.4	< 0.0001	285	50.3
Male condom ^c	137	27.1	78	8.6	0.005	215	15.2
Yes, with anal penetration	204	86.1	2	4.2	< 0.0001	206	72.3
Oral contraceptive ^c	128	25.3	28	3.1	< 0.0001	156	11.1
Spermicidal products ^c	–	–	27	56.3		27	9.5
Coitus interruptus ^c	2	0.8	2	4.2		4	1.4
	1	0.4	1	2.1		2	0.7
<i>Would seek help for contraception^b</i>							
No	231	62.4	119	60.4	0.02	250	44.1
Yes, gynaecologist	24	6.5	63	32.0	< 0.0001	87	15.3
Yes, pharmacist	47	12.7	13	6.6	< 0.0001	60	10.6
Yes, general physician	31	8.4	10	5.1	0.003	41	7.2
Yes, midwife	11	3.0	12	6.1	0.46	23	4.1
Yes, social worker	12	3.2	6	3.0	0.30	18	3.2
Yes, nurse	7	1.9	8	4.1	0.50	15	2.6
<i>Had sex without contraception^b</i>							
No	193	52.2	80	40.6	0.004	273	48.1
Yes, extra-vaginal	60	16.2	43	21.8	0.55	103	18.2
Yes, because unplanned	45	12.2	25	12.7	0.40	70	12.3
Yes, during infertile days	35	9.5	30	15.2	0.20	65	11.5
<i>Where do you usually have sex^b</i>							
Home, parents absent	203	54.9	105	53.3	0.30	308	54.3
Beach chalet	196	53.0	85	43.1	0.23	281	49.6
Car	158	42.7	77	39.1	0.90	235	41.4
Dormitory rooms	111	30.0	32	16.2	0.002	143	25.2
Beach	103	27.8	36	18.3	0.05	139	24.5
Forest	94	25.4	32	16.2	0.05	126	22.2
Night club	82	22.2	30	15.2	0.15	112	19.8
Home, parents present	50	13.5	33	16.8	0.12	83	14.6
Movie theatre	58	15.7	24	12.2	0.50	82	14.5
University	44	11.9	17	8.6	0.41	61	10.8
Public place (road, garden)	30	8.1	18	9.1	0.42	48	8.5
<i>Thinks sex without penetration can lead to pregnancy</i>							
	173	34.3	310	34.3	0.94	483	34.3
<i>Would abort a pregnancy^b</i>							
	187	50.5	102	51.8	0.06	289	51.0
<i>Would use morning after pill^b</i>							
	84	22.7	49	24.9	0.86	133	23.5

Some totals < 100% because of missing values.

^aMore than one answer possible.

^bPercentages calculated for those who declared previous sexual relations.

^cPercentages calculated for those who used contraception.

and community members should consider increasing opportunities for supervised activities, which could reduce risk-taking among youth [16].

We are aware of the possible biases that could arise from the study methodology: selection bias is possible due to the nature of the sample; however, we have no reason to believe that it would affect our results, since availability of students in the campus is theoretically unrelated to their sexual knowledge and practices. Refusal rate was

acceptable (30%), but we had no means of evaluating reasons for refusal. Information bias is also possible, as in all surveys; the sensitivity of the subject increases the risk of false answers, particularly regarding practices. However, we doubt that any measurement error would be sufficient to change the shape of our results. We believe that this study is reasonably able to depict the reality of contraception in young Lebanese university students, but the results cannot be extrapolated to other young Lebanese.

References

1. Erulkar A et al. Behavior change evaluation of a culturally consistent reproductive health program for young Kenyans. *International family planning perspectives*, 2004, 30(2):58–67.
2. Dei M et al. The resistance to contraceptive use in young Italian women. *European journal of contraception and reproductive health care*, 2004, 9:214–20.
3. Villarruel A et al. Predictors of sexual intercourse and condom use intentions among Spanish-dominant Latino youth: a test of the planned behavior theory. *Nursing research*, 2004, 53(3):172–81.
4. Gokengin D et al. Sexual knowledge, attitudes and risk behaviors of students in Turkey. *Journal of school health*, 2003, 73(7):258–63.
5. Manlove J, Ryan S, Franzetta K. Contraceptive use and consistency in U.S. teenagers' most recent sexual relationships. *Perspectives on sexual and reproductive health*, 2004, 36(6):265–75.
6. Bender S, Kosunen E. Teenage contraceptive use in Iceland: a gender perspective. *Public health nursing*, 2005, 22(1):17–26.
7. Tountas Y et al. Information sources and level of knowledge of contraception issues among Greek women and men in the reproductive age: a country-wide survey. *European journal of contraception and reproductive health care*, 2004, 9:1–10.
8. Glover EK et al. Sexual health experiences of adolescents in three Ghanaian towns. *International family planning perspectives*, 2003, 29(1):32–40.
9. Machado Pirotta KC, Schor N. Intenções reprodutivas e práticas de regulação da fecundidade entre universitários [Reproductive intentions and fertility regulation practices among university students]. *Revista de saúde pública*, 2004, 38(4):495–502.
10. Katende C, Gupta N, Bessinger R. Facility-level reproductive health interventions and contraceptive use in Uganda. *International family planning perspectives*, 2003, 29(3):130–7.
11. Harper G et al. The role of close friends in African American adolescents' dating and sexual behavior. *Journal of sex research*, 2004, 41(4):351–62.
12. Baalbaky G. Religiosity in Lebanese youth. In: *God and the right to the difference*. Kaslik, Lebanon, Holy Spirit University, 2005.

13. Rostosky SS et al. Coital debut: the role of religiosity and sex attitudes in the Add Health Survey. *Journal of sex research*, 2003, 40(4):358–67.
14. Halpem-Felsher B et al. Adolescents' self efficacy to communicate about sex: its role in condom attitudes, commitment and use. *Adolescence*, 2004, 39(155):443–56.
15. Eisenberg M et al. Parents' beliefs about condoms and oral contraceptives: are they medically accurate? *Perspectives on sexual and reproductive health*, 2004, 36(2):50–7.
16. Cohen D et al. When and where do youths have sex? The potential role of adult supervision. *Pediatrics*, 2002, 110(6):66–74.

World Health Day 2009: Save lives. Make hospitals safe in emergencies

World Health Day 2009 focuses on the safety of health facilities and the readiness of health workers who treat those affected by emergencies. Health centres and staff are critical life-lines for vulnerable people in disasters - treating injuries, preventing illnesses and caring for people's health needs.

They are cornerstones for primary health care in communities—meeting everyday needs, such as safe childbirth services, immunizations and chronic disease care that must continue in emergencies. Often, already fragile health systems are unable to keep functioning through a disaster, with immediate and future public health consequences.

World Health Day is one of WHO's most visible opportunities to raise awareness of global health priorities. This year, WHO and international partners will underscore the importance of investing in health infrastructure that can withstand hazards and serve people in immediate need. They will also urge health facilities to implement systems to respond to internal emergencies, such as fires, and ensure the continuity of care.