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The Effects of Health Education on Knowledge and Attitudes to Emergency Contraception by Female Students of a Tertiary Educational Institution in Enugu, South East Nigeria.

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Summary: This was an intervention study to assess the effects of health education on the knowledge and attitudes to emergency contraception (EC) by female students of University of Nigeria in southeast Nigeria. A structured questionnaire was used to collect data from 337 female students of a tertiary educational institution (150 in the study group and 187 from the control group) who were selected by multistage sampling. Subsequently, health education was conducted only among students in the study institution. Three months after this intervention, its effects were assessed through a survey using the same structured questionnaire employed in the baseline survey. Unlike the pre-intervention results, knowledge of EC was significantly higher ($P < 0.05$) among the study group than the controls. Attitudes to EC were also more favourable at the post- intervention survey among the study group. Health education can effectively improve knowledge and attitudes to EC among female students of tertiary institutions and this should be encouraged.

Keywords: Knowledge, Attitudes, Emergency contraception, Health education, Female students, Tertiary institutions.

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INTRODUCTION

Unintended pregnancy is a threat to the reproductive health of young women in developing countries (Aziken et al, 2003). Some of these women with unintended pregnancy resort to abortions – many of which are performed in unsafe conditions. Each year, unsafe abortions cause 20,000 deaths in Nigeria (Raufu, 2002) and account for over half of the emergency gynaecological admissions in most developing countries (Obionu and Okonkwo, 1999). Those who could not obtain an abortion carry their pregnancies to term, incurring risks of morbidity and mortality (Harrison, 1985), as well as some social problems such as dropping out of schools, single parenthood and premature marriages.

University undergraduates form an important high risk group for unplanned pregnancy because a large percentage of them engage in sporadic pre-marital sex (Bako 1998, Ebong 1994).Many of these pregnancies could be prevented by emergency contraception (EC) which is a method of birth control used to prevent pregnancy after an act of unprotected sexual intercourse (Hertzen and Van Look, 1996).It consists of emergency contraceptive pills (EC pills) which are 70-85% effective if taken within 72 hours after unprotected sex (Network, 2001)and a copper intra uterine contraceptive device (IUCD) which if inserted within 5 days after unprotected sex is over 95% effective (Network, 1994).

However, despite the great potential of EC to promote women's health by reducing the morbidity and mortality attributable to unwanted pregnancies, its use is still low at 2-30% in Nigeria (NDHS, 1990). It has been shown that many preventable reproductive health problems of young people arise out of

ignorance. This is because young people receive inadequate education on sexual and reproductive health (Ogoh, 2001).

Incidentally, no study to the researchers' knowledge has evaluated the effects of health education on the knowledge and attitudes to EC by female students in tertiary institutions in the southern part of Nigeria. A previous study by Obionu and Okonkwo was a cross sectional study on knowledge and practice of EC and had no intervention. This study sought to achieve this. The findings are expected to yield evidence that would inform appropriate interventions to promote the reproductive health of Nigerian youths.

MATERIALS AND METHODS

The study was an intervention study targeted at female students in a tertiary educational institution in Enugu state, southeast Nigeria. Enugu State has 6 tertiary institutions and a population of 3,257,298 (Nigerian Population Census 2006). The study population was selected using a multistage sampling technique. University of Nigeria, Nsukka (UNN) was selected by simple random sampling from a list of all the tertiary institutions in the state. UNN has two campuses namely, University of Nigeria, Enugu campus (UNEC) in Enugu North LGA and University of Nigeria, Nsukka campus in Nsukka LGA. These campuses are 180Km apart. Subsequently, UNEC was selected through balloting as the study institution and University of Nigeria, Nsukka campus as the control institution.

In the study institution, 10 departments were selected by simple random sampling from a sample frame of the 35 departments in the campus. From the 10 departments, 150 students were recruited by the proportionate sampling technique as follows:

$$\frac{\text{No of female students in each dept.}}{\text{Total no of female students in the 10 depts}} \times \text{Sample Size (150)}$$

In each department, the appropriate number of female students were selected by simple random sampling using the departmental register. In the control institution, 187 female students were selected in a similar manner.

A baseline data was collected from both the study and control groups using a pretested, interviewer-administered questionnaire. Information was sought on their socio-demographic data, knowledge and attitudes to EC. This was followed by three sessions of health education on EC held on Saturday mornings only among the study group.

Three months after the intervention, its effects were assessed using the same household questionnaire employed in the baseline study in both the study and control institutions.

Questions on knowledge were scored as follows:

- Correct knowledge = Score 1
- Incorrect/no knowledge = Score 0

Favourable attitude to EC means agreement with the positive statements on EC or disagreement with the negative statements on EC.

The data was analyzed using Statistical Packages for Social Sciences (SPSS) version 13 software and tests of significance were conducted using chi-square and z-tests. The entire statistical calculations were done at 95% confidence level.

Ethical Considerations

Approval for the study was obtained from the Health Research Ethics Committee of University of Nigeria Teaching Hospital, Enugu. Informed consent was also obtained from participants after explaining clearly the purpose and methodology of the study. In addition, the controls were also health educated on EC at the end of the study.

RESULTS

All the 150 students sampled in the study institution and 187 from the control institution participated in the study. Their age range was 18 to 26 years with a mean age of 21.4years and standard deviation of 2.1years among the study group and 21.2 ± 2.2years among the controls (Table 1). Most were single (96% study and 95.2% control),christians of the Roman catholic denomination (52.7% study and 53.5% control) and in the first year of study (64% study and 64.7% control).

One hundred and seven respondents (71.3%) in the study group and 135 (72.2%) among the controls were aware of EC at the baseline survey (Table 2). The difference is not significant statistically, (χ^2 = 0.030, P = 0.862). Only 25 (16.7%) respondents in the study group and 32 (17.1%) in the control group identified postinor as an EC Pill. The difference is not statistically significant, (P = 0.914). Knowledge of the advantages of EC is similar in both groups as 56% of the study and 56.7% of the controls knew that EC reduces unwanted pregnancies. The difference is not significant statistically, (χ^2 = 0.016, P = 0.900). In the study group, 22 (14.7%) students knew that vomiting is one of the side effects of EC Pills while 28 (15.0%) respondents among the control group had this knowledge. The difference is not statistically significant, (P = 0.937).

However, after the intervention (Table 3), awareness of EC rose to 100% in the study group as against 72.7% among the controls. The difference is significant statistically, (χ^2 = 48.204, P = 0.000).

Similarly, 102 (68%) respondents could identify postinor as an EC Pill at post intervention.

Table-1

Distribution of Respondents according to some Demographic Characteristics

Characteristic	Study (N = 150)	Control (N = 187)
	Frequency (%)	Frequency (%)
Age range (years)		
18-20	62 (41.3)	84 (44.9)
21-23	58 (38.7)	67 (35.8)
24-26	30 (20.0)	36 (19.3)
Marital status		
Single	144 (96.0)	178 (95.2)
Married	6 (4.0)	9 (4.8)
Religion		
Catholic	79 (52.7)	100 (53.5)
Pentecostal	39 (26.0)	51 (27.3)
Protestant	32 (21.3)	36 (19.2)
Year of study		
First	96 (64.0)	121 (64.7)
Second	32 (21.3)	40 (21.4)
Third	17 (11.3)	19 (10.2)
Fourth	5 (3.4)	7 (3.7)

This is significantly higher than only 33 (17.6%) respondents in the control group who could do the same, (P = 0.000). Post intervention, the number with Knowledge of the correct timing of EC Pills also rose to 31 (20.7%) among the study group and this is significantly higher than only 7 (3.7%) obtained at the survey among the controls, (χ^2 = 23.828, P = 0.000).

The attitudes to positive statements on EC at both the pre-intervention and post-intervention surveys are displayed on Table 4. At baseline, the attitudes to EC were quite similar in both groups. For instance, 91 (60.7%) respondents in the study group and 115 (61.5%) respondents among the controls agree with statement "EC offers women a second chance to prevent pregnancy." The difference is not significant statistically, (χ^2 = 0.024, P = 0.878). Similarly, 58% of the students in the study group were in support of the wide advertisement of EC in order to raise its awareness. This is not significantly different from the 58.8% of the control group who were similarly disposed, (χ^2 = 0.023, P = 0.879).

Table 2-

Knowledge of Emergency Contraception at Baseline

Knowledge	Study (N = 150) Frequency (%)	Control (N = 187) Frequency (%)	χ^2	p-value
Awareness of EC	107 (71.3)	135 (72.2)	0.030	0.862
Definition of EC	55 (36.7)	67 (35.8)	0.025	0.874
Forms of EC known:				
Postinor	25 (16.7)	32 (17.1)	0.012	0.914
Copper-T IUCD	10 (6.7)	12 (6.4)	0.008	0.927
OCP in higher doses	9 (6.0)	12 (6.4)	0.025	0.875
Indications of EC:				
After unprotected sex	50 (33.3)	60 (32.1)	0.059	0.808
After coerced sex	11 (7.3)	13 (7.0)	0.018	0.892
When condom slips or bursts	7 (4.7)	8 (4.3)	0.030	0.864
When pill is forgotten	4 (2.7)	5 (2.7)	0.001	0.999
After expulsion of IUCD	3 (2.0)	4 (2.1)	0.001	0.999
Correct timing of ECPs	4 (2.7)	5 (2.7)	0.001	0.999
Correct timing of emergency copper T IUCD	0 (0.0)	0 (0.0)		
Correct dosing of ECPs	7 (4.7)	9 (4.8)	0.004	0.950
Advantages of EC				
Reduces unwanted pregnancies	84 (56.0)	106 (56.7)	0.016	0.900
Reduces induced abortions	25 (16.7)	29 (15.5)	0.083	0.773
Reduces maternal deaths	9 (6.0)	11 (5.9)	0.020	0.964
Side effects of EC:				
Vomiting	22 (14.7)	28 (15.0)	0.006	0.937
Nausea	16 (10.7)	16 (8.6)	0.431	0.511
Breast tenderness	12 (8.0)	8 (4.3)	2.065	0.151
Ways of increasing awareness of EC:				
Seminar/workshops in schools	63 (42.0)	65 (34.8)	1.853	0.173
Use of mass media	37 (24.7)	60 (32.1)	2.235	0.135
Teaching of EC in Family Planning clinics	11 (7.3)	18 (9.6)	0.556	0.456
Inclusion of EC in secondary school curriculum	6 (4.0)	8 (4.3)	0.016	0.899

Table 3-
Knowledge of Emergency Contraception at Post-Intervention

Knowledge	Study (N = 150) Frequency (%)	Control (N = 187) Frequency (%)	χ^2	p-value
Awareness of EC	150 (100.0)	136 (72.7)	48.204	0.000*
Definition of EC	137 (91.3)	66 (35.2)	109.130	0.000*
Forms of EC known:				
Postinor	102 (68.0)	33 (17.6)	87.888	0.000*
Copper-T IUCD	20 (13.3)	20 (10.7)	0.554	0.457
OCP in higher doses	21 (14.0)	10 (5.3)	7.460	0.006*
Indications of EC:				
After unprotected sex	111 (74.0)	60 (32.1)	58.504	0.000*
After coerced sex	8 (5.3)	11 (5.9)	0.047	0.828
When condom slips or bursts	13 (8.7)	9 (4.8)	2.026	0.155
When pill is forgotten	5 (3.3)	5 (2.7)	0.126	0.723
After expulsion of IUCD	6 (4.0)	5 (2.7)	0.464	0.496
Correct timing of ECPs	31 (20.7)	7 (3.7)	23.828	0.000*
Correct timing of emergency copper T IUCD	57 (38.0)	0 (0.0)	82.843	0.000*
Correct dosing of ECPs	77 (51.7)	8 (4.3)	97.715	0.000*
Advantages of EC				
Reduces unwanted pregnancies	97 (64.7)	107 (57.2)	1.932	0.164
Reduces induced abortions	35 (23.3)	29 (15.5)	3.313	0.069
Reduces maternal deaths	33 (22.0)	7 (3.7)	26.521	0.000*
Side effects of EC:				
Vomiting	99 (66.0)	15 (8.0)	124.994	0.000*
Nausea	41 (27.3)	16 (8.0)	22.404	0.000*
Breast tenderness	18 (12.0)	8 (4.3)	6.971	0.008*
Ways of increasing awareness of EC:				
Seminar/workshops in schools	47 (31.3)	64 (34.2)	0.315	0.575
Use of mass media	54 (36.0)	60 (32.1)	0.570	0.450
Teaching of EC in Family Planning clinics				
Inclusion of EC in secondary school curriculum	34 (22.7)	18 (9.6)	10.848	0.001*
	3 (2.0)	10 (5.3)	1.693	0.193

*Statistically significant

However, post-intervention, the change in attitudes towards the positive statements on EC improved significantly in the study group when compared to that among the controls, ($P < 0.05$ in all but two of the variables). For instance, after the intervention, attitude to the statement that EC offers women a second chance to prevent pregnancy rose to 90.4% among the study group while it remained 61% in the control group. The difference is statistically significant, ($\chi^2 = 42.512$, $P = 0.000$).

Table 5 shows the attitudes to negative statements on EC at baseline and post-intervention. There is no statistical difference between the two groups at baseline ($P > 0.05$ in all the variables). For example, 38 (25.3%) respondents in the study group and 50 (26.8%) of the control group were in favour of the statement that EC is an abortifacient which should be banned. The difference is not statistically significant, ($\chi^2 = 0.085$, $P = 0.770$). After the intervention, there was a significant reduction in the number of respondents who are in favour of the negative statements on EC in all the variables when compared with the controls, ($P < 0.05$). For instance, the proportion of the respondents who agree with the statement: "EC is an abortifacient and should be banned" decreased to 20 (13.4%) among the study group while it was 50 (26.7%) among the controls. The difference is statistically significant, ($P = 0.003$)

DISCUSSION

Awareness of EC was high in the present study being 71.3% in the study group and 72.2% among the controls. This is similar to an awareness of 77.5% reported previously in Enugu among female adolescents (Obionu and Okonkwo, 1999). It is also similar to 75.7% obtained by Arowojulu and Adekunle, 2000 among post-secondary school students in south west Nigeria. The present finding is however lower than that reported among Grampian women which showed that 94% of them were aware of EC (Smith *et al*, 1996).

Table 4-

Attitudes to Positive Statements on Emergency Contraception

Attitude	Baseline				Post-Intervention			
	Study (N = 150) No (%)	Control (N = 187) No (%)	χ^2	p-value	Study (N = 150) No (%)	Control (N = 187) No (%)	χ^2	p-value
EC offers women a second chance to prevent pregnancy	91 (60.7)	115 (61.5)	0.024	0.878	138 (90.4)	114 (61.0)	42.512	0.001*
EC should be made widely available	84 (56.0)	100 (53.5)	0.214	0.644	119 (79.3)	98 (52.4)	22.321	0.001*
ECPs should be sold at chemist shops without Dr's prescription	17 (11.3)	19 (10.1)	0.120	0.729	50 (33.3)	21 (11.2)	24.453	0.001*
EC should be widely advertised to increase its awareness	87 (58.0)	110 (58.8)	0.023	0.879	93 (62.0)	112 (59.9)	0.155	0.694
EC is safe and has very few contraindications	43 (28.6)	62 (33.2)	0.782	0.377	115 (76.7)	60 (32.1)	66.269	0.001*
If needed in future, I will use EC or recommend it to a friend	90 (60.0)	120 (64.2)	0.617	0.432	125 (83.3)	118 (63.1)	16.939	0.001*
EC services should be offered free in government facilities	79 (52.7)	99 (52.9)	0.003	0.960	84 (56.0)	98 (52.4)	0.433	0.511
ECPs should be made available at youth clubs & social centres	71 (47.3)	87 (46.5)	0.022	0.882	116 (77.3)	88 (47.1)	31.933	0.001*

*Statistically significant

Table 5-

Attitudes to Negative Statements on Emergency Contraception

Attitude	Baseline				Post-Intervention			
	Study (N = 150) No (%)	Control (N = 187) No (%)	χ^2	p-value	Study (N = 150) No (%)	Control (N = 187) No (%)	χ^2	p-value
EC should be available in hospitals but administered only on Dr's prescription	102(68.0)	141 (75.4)	2.033	0.155	99 (66.0)	142 (75.9)	4.034	0.045*
ECPs should be made widely available but sold only on Dr's prescription	85 (56.6)	102 (54.5)	0.152	0.697	53 (35.3)	119 (63.6)	26.682	0.001*
EC is an abortifacient and should be banned	38 (25.3)	50 (26.7)	0.085	0.770	20 (13.4)	50 (26.7)	9.088	0.003*

*Statistically significant

It is also lower than 93% awareness reported among teenagers in south east Scotland (Graham *et al*, 1996).The disparity could be because the earlier studies were conducted in developed countries where EC was first introduced. However, the present finding is higher than that reported in Kenya among family planning clients which was 11% (Muia*et al*, 2000). The reason could be because the earlier study was conducted more than 10 years ago when EC was newly introduced into developing countries. This result indicates the need to raise awareness of EC among young women in developing countries to make it comparable with that in developed countries.

Knowledge of the timing of EC Pills was rather poor in both groups at baseline. At the post intervention survey however, this knowledge was significantly higher among the study group than in the controls. This finding is similar to that obtained in the United Kingdom where the proportion of teenagers knowing the correct timing of both types of EC was significantly higher in the group who received health education than in the control group (Graham *et al*, 2002).

Overall, the knowledge performance was 16.72% for the study group and 16.53% for the controls at baseline. This increased significantly to 34.67% in the study group after the intervention. This finding is similar to that reported in Mexico where as a result of a health education intervention, 33% of the study population knew about EC in year 2000, as against only 20% in 1997 before the introduction of the health education program (Kim, 2001). The present finding implies that further improvement in knowledge of EC could be achieved with repeated reinforcement of the health education.

Despite the poor knowledge displayed by the respondents presently studied, their attitudes to EC were quite favourable even at baseline and these were further improved upon by the health education intervention as evidenced by the study group performance at post intervention survey. For instance, 58% of the study group and 58.8% of the controls were in favour of the wide advertisement of EC. This is slightly lower than a previous finding in Enugu where 64.5% of those studied favoured increased advertisement of EC (Obionu and Okonkwo, 1999).

Furthermore, 60% of the study group and 64.2% of the controls said they would use EC in future or recommend it to a friend if the need arises. However after the intervention, this percentage rose significantly to 83.3% among the study group. This shows that women are more likely to be positively disposed to EC when equipped with correct information. This is similar to an earlier finding (Brieger et al 2001) in two West African countries (Ghana and Nigeria) which showed that following a health education programme, there was a significantly higher proportion of youths using modern contraceptive methods among the study group than the controls.

Although the students readily agreed that EC should be made widely available, they were however quite skeptical about deregulation of EC as evidenced by the low percentage of those who were in support of selling EC pills at chemist shops without doctor's prescription. This however will limit access to the drug but will protect it from being abused. This result is similar to the finding among Grampian women where a lower percentage of the studied population was in favour of deregulation of EC (Smith *et al*, 1996).

Conclusions and Recommendations

The study has shown that health education on EC can effectively improve the knowledge of EC. It also induced many positive attitudinal changes towards EC among the students.

It is therefore recommended that regular health education on EC should be conducted in post secondary schools in Nigeria and that EC services should be offered at subsidized cost in government hospitals and clinics and at youths' centres to enhance its affordability by every woman in need.

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