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Adaptation of the «European Code Against Cancer» (ECAC) to the Cultural Needs of Low Income Women in Greece: Comparative Effectiveness of Health Education Approaches

Eleni Petridou[1], Yannis Skalkidis[1], Vassilis Pailopoulos[1], Zoi Pailopoulos[1], Nectaria Toupadaki[2], Anastasia Tzonou[2]

[1] *Hellenic Society for Social Pediatrics and Health Promotion, Athens*
[2] *Department of Hygiene and Epidemiology, Medical School, Athens*

There have been almost six years, since the Europe Against Cancer Program was first adopted by the Heads of the EEC Governments in Milan and more than three years since the European Code Against Cancer (ECAC, the Decalogue of EEC) was introduced as a basic tool in the cancer prevention efforts in Europe [1]. The information campaign of the program focuses on the ECAC and covers a wide range of activities, undertaken at the national level by scientific associations as well as by family practitioners.

Although ECAC is generally considered as an effective tool, several questions remain to be answered. Thus, the comparative effectiveness of alternative health education approaches utilizing ECAC has not been established, and it is not known whether ECAC has been successful in reducing inequalities in knowledge and health promotion activities among various socioeconomic groups. In order to address these questions we have undertaken a series of studies to assess the extent to which greek mothers understand the ten ECAC messages on cancer etiology and prevention. Since the family environment, and specifically the mothers, play an essential role in shaping health knowledge and attitudes of their offsprings [2,3,4] a program that can reach and affect them would be expected to have major health promoting implications. Many Greek women are less educated than their counterparts in Northern and Western Europe and it is not clear how the ECAC messages should be presented to them in order to maximize effectiveness. The specific purpose of the present study was to explore whether the ECAC messages are clearly understood by women of low educational background in Greece and whether particular adaptations or procedures may increase the level of understanding of the target group.

Subjects and Methods

Actual and perceived knowledge about cancer causation and prevention were addressed through a 78–items, self-administered questionnaire [5]. Each of these items contains a statement referring to cancer causation or prevention and the mother was asked to indicate whether she agreed (right), disagreed (wrong) or had no opinion about it (don't know). The structure of the questionnaire allows for assessment of perceived knowledge (PK) – for what proportion of the 78–items the subject thought that she knew the correct answer, correct knowledge (CK) – for what proportion of the 78-items she actually knew the correct answer and accuracy of knowledge (AK) – the ratio of CK over PK [6,7,8,9]. In addition, the questionnaire had a section in which women could indicate, in a precoded form, their basic demographic and socioeconomic characteristics as well as their status with respect to smoking habits, contraceptive knowledge and practice, and other variables.

During 1989 the school psychologist of an elementary school in the greater Athens area sent a letter to the mothers of 400 pupils to inform them on the purpose of the study. The women were divided into 5 groups, according to the class their children were attending at school; there was no difference among the 5 groups with respect to any socioeconomic variable. In particular, there were no substantial or significant differences among the groups with respect to occupation (housewives, manual, non manual) or to years of schooling, which is considered the best socioeconomic indicator in Greece [10]. Group A mothers responded to questionnaire without previous exposure to ECAC. Group B mothers responded to the questionnaire, 4–7 days after they were given a brochure with ECAC, produced in Greek language by the Hellenic Cancer Society. Group C mothers responded to the questionnaire, 4–7 days after they were given the brochure with ECAC along with a set of explanatory cartoons specially designed by K Mitropoulos, a distinguished Greek cartoonist. Group D mothers responded to the questionnaire, a few days after they were given the brochure along with a revised, exemplified version of the code (revised and exemplified by the authors). Group E mothers responded to the questionnaire, a few days after they were given the brochure with ECAC and they had a personal consultation with the school psychologist, who explained the various messages during a 15 min session. The psychologist went through the various ECAC messages encouraging the women to express their concerns and queries and stressing that no question was too naive or too unimportant to be expressed.

Tab. 1. Response proportions among women in the five compared groups[a]

Group	Questionnaires distributed	Number of responses	Response proportion (%)
A	122	76	(62)
B	60	41	(68)
C	68	55	(81)
D	90	52	(58)
E	60	52	(87)
Total	400	276	(69)

[a]) Group A = no intervention; B = ECAC only; C = ECAC + cartoons; D = simplified ECAC; E = ECAC + consultation

The response rate (Table 1) was 62% for group A, 68% for group B, 81% for group C, 58% for group D and 87% for group E. Contrary to our experience in a similar study with prospective health professionals, where no refusals were practically noted [11], in the present study a high percentage (31%) of mothers did not answer the questionnaire. Several mothers stated verbally or in writing that they did not want to answer the questionnaire, because of their prejudices against cancer. Out of the 276 questionnaires that were returned, 15 were excluded, because there were several missing values.

As indicated, there were three answers available to each question: 1 = correct, 2 = wrong, 3 = don't know. By including the «don't know» reply three indices of reporting results – Correct knowledge (CK), Perceived knowledge (PK) and Accuracy of knowledge (AK) – were developed:

$$CK = \frac{\text{Number of correct responses}}{\text{Total number of questions}}$$

$$PK = \frac{\text{Number of questions marked correct or wrong}}{\text{Total number of questions}}$$

$$AK = \frac{\text{Number of correct responses}}{\text{Number of responses marked correct or wrong}}$$

The most important parameter is of course CK. This varied considerably among the 78-items (from 19%-100%) and therefore improvement between Group A on the one hand (baseline group) and any of the intervention groups (B,C,D,E) on the other, must be expressed through the odds ratio statistic (OR), calculated in the following way, comparing groups E and A:

$$OR(E,A) = \frac{(CK \text{ in Group E}) \times (1 - CK \text{ in Group A})}{(1 - CK \text{ in Group E}) \times (CK \text{ in Group A})}$$

OR's higher than 1 imply improvement of CK in the respective item, OR's lower than 1 imply deterioration and OR's = 1 imply no change.

Results

Table 2 shows the distribution of mothers in groups A,B,C,D, and E with respect to CK about cancer etiology and prevention, by marginal empirical quintiles, ie in the total group. More than 70% of mothers who had a little tutoring by the school psychologist (Group E) occupied the upper quintile, whereas the respective figures for all other groups were about 10%. It is worthwhile that even among Group D women, who were given the revised version of the code, the figure is also 9.6%. These findings indicate that the level of dissemination and/or understanding of the messages of ECAC are very low among Greek mothers. Conventionally used, nonverbal health education materials do not seem to affect the levels of CK. Neither did the revised version of the code, which contained further simplified messages, make any difference, probably because women of this socioeconomic group in Greece pay little attention to reading materials. What made a substantial difference was the personal contact with the health educator who was able to give concrete answers to specific questions and concerns that were raised during the discussion.

Tab. 2. Distribution of the 261 Greek mothers with respect to correct knowledge about cancer etiology and prevention, by marginal empirical quintiles and type of intervention

Intervention group[a]		Quintiles					Total
		Lowest				Highest	
A	No	15	18	15	21	7	76
	(%)	19.7	23.7	19.7	27.6	9.2	100.0
B	No	6	8	7	8	5	34
	(%)	17.6	23.5	20.6	23.5	14.7	100.0
C	No	14	9	12	12	4	51
	(%)	27.5	17.6	23.5	23.5	7.8	100.0
D	No	14	7	14	12	5	52
	(%)	26.9	13.5	26.9	23.1	9.6	100.0
E	No	1	3	3	7	34	48
	(%)	2.1	6.3	6.3	14.6	70.8	100.0
Total	No	50	45	51	60	55	261
	(%)	19.2	17.2	19.5	23.0	21.1	100.0

[a]) Group A = no intervention; B = ECAC only; C = ECAC + cartoons; D = simplified ECAC; E = ECAC + consultation

Tab. 3. Mean (and standard error of the mean) of correct (CK), perceived (PK) and accurate (AK) knowledge (%) with respect to cancer etiology and prevention among women, in five intervention groups[a]

Group	A		B		C		D		E[b]	
	$\bar{x}$	SE	$\bar{x}$	SE	$\bar{x}$	SE	$\bar{x}$	SE	$\bar{x}$	SE
CK	56.6	1.1	56.4	1.9	54.4	1.6	54.9	1.5	70.3	1.4
PK	83.8	1.4	83.6	2.0	82.2	1.8	83.8	1.9	95.2	1.3
AK	67.8	0.9	67.2	1.3	66.2	1.2	65.7	1.1	73.6	0.8

[a]) Group A = no intervention; B = ECAC only; C = ECAC + cartoons; D = simplified ECAC; E = ECAC + consultation

[b]) Differences between group E and any of the other three groups are statistically highly significant ($P < 10^{-3}$) with respect to all three parameters. Differences among the other four groups (A, B, C and D) are statistically non significant, with respect to any of the three parameters

Table 3 shows mean values (±SE) of CK, PK, AK in all five groups. There is no difference among groups A,B,C, and D, with respect to any of the three study parameters (CK, PK, AK). By contrast, there is a highly significant difference between Group E on the one hand and any of the other groups on the other with respect to CK. This finding is of course fully compatible with what was seen in Table 2. Furthermore, Table 3 shows that the improvement in CK among women in Group E is accomplished through an improvement in both PK and – to a lesser extent – to AK.

Table 4 shows multiple regression derived coefficients and associated 95% Confidence Intervals (CI) linking several predictor variables to CK. This variable is normally distributed whereas PK is not. It can be seen that in this group, education, although positively related to CK, is not an important or statistically significant predictor (6 more years of schooling corresponding to 1.1% more CK). The number of induced abortions and age are not significant predictors either. By contrast, women who recalled the date of their last period, knew several effective contraceptive methods, and were nonsmokers, had substantially higher correct knowledge on cancer etiology and prevention compared to women who did not recall the date of their last menstrual period, had little knowledge about effective contraceptive methods or were themselves smokers. Table 4 also shows that group E has substantial and statistically significant higher CK, compared to group A and the other intervention groups. The difference between Table 4 – in which groups E and A differ by 10.6% – and Table 3 in which these two groups differ by 13.7%, is due to the fact that the first figure is adjusted, whereas the latter is unadjusted for the other predictor variables.

The highest OR's, implying substantial improvement between groups E and A, were noted with respect to questions concerning screening, nutrition and occupational cancers, indicating that in these areas tutoring was particularly effective.

Tab. 4. Regression coefficients, standard errors (SE) and associated 95% Confidence Intervals (CI) linking several variables to correct knowledge

Variable	Regression Coefficient	SE	95% CI	
Group				
A (no intervention)	Reference group			
B (ECAC)	− 0.3	2.1	− 4.5	3.9
C (ECAC + cartoons)	− 1.2	2.0	− 5.1	2.7
D (modified ECAC)	− 1.9	1.9	− 5.5	1.7
B (personal contact)	10.7	2.0	6.7	14.7
Years of schooling				
0–11	Reference group			
12 or more	1.1	1.1	− 0.9	3.2
Smoking				
Non-smokers (0)	Reference group			
Smokers (1)	− 3.6	1.3	− 6.2	−1.0
Absortions				
Yes (1)	Reference group			
No (2)	1.6	1.3	− 1.0	4.1
Age				
−30, 31−40, 41 +	0.7	1.2	− 1.6	3.0
Number of effective contraceptive methods known (continuous)	2.1	0.5	1.0	3.2
Last menstruation				
date recalled (1)	Reference group			
other (2)	− 8.7	2.5	−13.5	−3.8

Discussion

The ECAC is a useful tool for the dissemination of information in cancer etiology and prevention. It summarizes important information which, if translated to behavior by everyone concerned in a European population, can lead to reduction of total cancer mortality by up to 30% [12]. However, it is clear that large segments of the population cannot grasp the significance of even the single messages of ECAC; this has not an easy remedy. Illustration through cartoons or efforts to further simplify the messages, were no more effective than the code itself, which was not effective either. Only when the messages of ECAC were clearly explained on a person-to-person basis, a substantial improvement was noted. This indicates that the road to cancer prevention through education will not be an easy one. It may perhaps be more difficult to get the people adopt the simple rules that prevent cancer than it has been to accumulate the evidence that led to the formulation of the messages.

Part of the problem appears to be that for a substantial segment of the population cancer is too threatening to be dealt with, in a rational way. Almost 10% of the women who were asked to participate in the present study refused to do so, because they did not want to hear anything about cancer, even about cancer prevention. An important conclusion from this study is that the demystification of cancer is a crucial first step towards effective health education. Personal tutoring reduces the negative attitude (there were fewer refusals of cooperation in the group involving personal contact than in any other group) in addition to improving the understanding of the health education messages.

Another finding of the present study is that formal education, among women with limited overall educational achievement, is not a strong predictor of knowledge about cancer prevention. In other words, a substantial educational level can be reached before an individual can absorb the whole range of messages which – if transformed in healthy behavior – will finally lead to effective cancer prevention. By contrast, there seems to be a good correlation between knowledge about cancer etiology and prevention and knowledge about effective contraception. After controlling for

formal education this implies that health education is more often than not, multidimensional and that people tend to be knowledgeable or otherwise, in several areas concerning health promotion and disease prevention.

It is frequently stated that health knowledge does not always correspond to health behavior. The data of the present study are encouraging in the sense that non smokers had significantly and substantially higher knowledge about cancer preventive measures compared to smokers.

The results of the present study indicating that personal tutoring is necessary in order to spread the ECAC may not, and probably do not, apply to better educated groups. However, health care in general and cancer prevention in particular should not only be generally effective but equitable as well. It is clear that for effective cancer prevention in the lower socioeconomic groups more efforts are required per individual than in higher socioeconomic strata. Nevertheless, primary prevention remains cost effective when compared to treatment and of course represents the only strategy that can reduce the incidence of the disease and the associated anxiety and sorrow; therefore this effort is not only ethically imperative but also economically justifiable.

Summary

The European Code Against Cancer (ECAC) was administered to four groups of women, each comprising about 50 women. In the first group, the Greek translation of the original code was given; in the second group a set of explanatory cartoons was given in addition to the code; in the third group a more simplified version of the code was administered; lastly, in the fourth group the code was administered and in addition, mothers were tutored for about 15 minutes by a psychologist. A comparison group of 76 women were not exposed to ECAC. After 4 to 7 days, all women were given a 78-item questionnaire, probing their perceived knowledge (PK) about cancer etiology and prevention, their accurate knowledge (AK) and eventually their correct knowledge (CK), (all expressed in %). No difference, with respect to any of the above three parameters was noted between the three groups of women who were given the ECAC, the ECAC with cartoons or the modified ECAC without individual tutoring on the one hand and the comparison group on the other. By contrast, there was a substantial and highly significant improvement of knowledge among women who were given the ECAC and who were also individually tutored; this difference in CK was accounted for by improvement in both PK and AK. Improvement was particularly evident in respect to questions dealing with cancer screening, nutritional and occupational cancers, whereas there was little improvement with respect to knowledge concerning some aspects of tobacco smoking and exposure to radiation. CK about cancer etiology and prevention was positively correlated with AK about contraception and nonsmoking status, even among women of the same age and educational status.

Résumé

Adaptation d'un programme européen de lutte contre le cancer aux besoins culturels des femmes de bas revenu en Grèce: une comparaison de l'efficacité des approches éducatives

Le «European Code Against Cancer» (ECAC) a été prodigué à quatre groupes de 50 femmes. Dans le premier groupe, la traduction grecque du programme original a été fournie; dans le second groupe un ensemble d'images explicatives a été fourni en supplément du texte; dans le troisième groupe une version simplifiée du texte a été fournie; enfin, dans la quatrième groupe, le texte était accompagné par un entretien de 15 minutes avec un psychologue. Dans un groupe de comparaison (76 femmes), aucun texte n'était donné. Après un délai de 4 à 7 jours, toutes les femmes remplissaient un questionnaire évaluant la connaissance des participantes sur l'étiologie et la prévention du cancer, la connaissance adéquate et la connaissance exacte. Aucune différence n'a été notée entre les trois groupes de femmes ayant reçu l'information et le groupe de comparaison. En revanche, il y a eu une amélioration substantielle des connaissances chez les femmes ayant reçu le texte plus le conseil par un psychologue. Cette différence porte sur les connaissances correctes aussi bien que sur les connaissances perçues et les connaissances adéquates. L'amélioration était particulièrement importante concernant le dépistage, les cancers liés à l'alimentation; en revanche, il y a eu peu d'amélioration des connaissances concernant le tabagisme et l'exposition aux radiations. Les connaissances concernant la prévention et l'étiologie du cancer étaient positivement corrélées avec les connaissances concernant la contraception et le tabagisme, même chez les femmes de même âge et de même niveau d'éducation.

Zusammenfassung

Anpassung des «European Code Against Cancer» (ECAC) an die kulturellen Bedürfnisse von Frauen der unteren Einkommensklasse in Griechenland: Wirksamkeit von Gesundheitserziehungskonzepten im Vergleich

Der «European Code Against Cancer» (ECAC) wurde vier Gruppen mit je 50 Frauen vorgelegt. Der ersten Gruppe wurde eine griechische Übersetzung des Originals gegeben; die zweite Gruppe erhielt in Ergänzung zum Code erklärende Cartoons; der dritten Gruppe wurde eine vereinfachte Version des Codes vorgelegt und die vierte Gruppe erhielt neben dem Code eine Betreuung von etwa 15 Minuten durch einen Psychologen. Einer Kontrollgruppe von 76 Frauen wurde der ECAC nicht vorgelegt. Nach 4–7 Tagen erhielten sämtliche Frauen einen Fragebogen mit 78 items zu Ursachen und Prävention von Krebs. Dabei sollte überprüft werden, wieviel Wissen erinnert wurde (perceived knowledge, PK), wieviel Wissen exakt wiedergegeben wurde (accurate knowledge, AK) und wieviel korrektes Wissen (correct knowledge, CK) vorhanden war (Angaben in %). Bezüglich dieser drei Parameter wurde kein Unterschied festgestellt zwischen den beiden Gruppen mit dem modifizierten ECAC ohne Betreuung bzw mit dem ECAC und ergänzenden Cartoons einerseits und der Kontrollgruppe andererseits. Im Unterschied dazu fand sich eine deutlich signifikante Wissensverbesserung bei den Frauen, die neben dem ECAC eine individuelle Betreuung erhalten hatten; diese Differenz im korrekten Wissen (CK) war sowohl auf eine Verbesserung des PK (erinnerliches Wissen) als auch des AK (exakt wiedergegebenes Wissen) zurückzuführen. Eine Wissensverbesserung war besonders deutlich bei Fragen zu Krebsscreening, ernährungs- und arbeitsbedingten Krebsarten, während eine nur geringfügige Verbesserung bei den Aspekten Tabak und Strahlenexposition zu verzeichnen war. Es gab eine positive Korrelation zwischen dem «CK» über Ursachen und Prävention von Krebs einerseits und dem «AK» über Kontrazeption und Nichtrauchen andererseits, auch bei Frauen derselben Altersgruppe und desselben Ausbildungsstandes.

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Address for correspondence:
Eleni Petridou MD, MPH
Hellenic Society for Social Pediatrics and Health Promotion
15 Oceanidon Street
GR-11745 Athens, Greece