

Self-efficacy: does it predict the effectiveness of contraceptive use in Iranian women?

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الكفاءة الذاتية: هل تتنبأ بفعالية استخدام مانعات الحمل لدى الإيرانيات؟
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الخلاصة: تستكشف الدراسة الآثار النسبية للكفاءة الذاتية حول استخدام مانعات الحمل الفموية لدى عينة من 352 من الإيرانيات المتزوجات اللاتي تتراوح أعمارهن بين 18 و49 عاماً. وقد قيم الباحثون في مقابلات مُعدّة البنين 5 متغيرات استناداً إلى نموذج خطوات تغيير السلوك (المعارف والموافقة والقصد والممارسة والحملات الإعلامية)، وربطوها بإجراءات الكفاءة الذاتية لتنظيم الأسرة وبالكفاءة الذاتية بشكل عام. وتشير النتائج إلى أن إجرائين مستقلين هما الأكثر فعالية إذا ما نُقداً معاً في التنبؤ بالمقاصد السلوكية الخاصة بالاستخدام الفعال لمانعات الحمل الفموية، مع مساهمة هي الأكثر قوة للكفاءة الذاتية في تنظيم الأسرة. ويقترح الباحثون أن تقنيات التدخل في الكفاءة الذاتية ستفيد مستخدمات مانعات الحمل الفموية في اتقاء حدوث الحمل غير المقصود.

ABSTRACT This study explored the relative effects of self-efficacy on oral contraceptive use among a sample of 352 Iranian married women aged 18–49 years. In structured interviews 5 variables based on the Steps to Behaviour Change model (knowledge, approval, intention, practice and advocacy) were assessed and correlated with measures of family planning self-efficacy and general self-efficacy. The results indicated that the 2 independent measures, when taken together, were more effective in predicting behavioural intentions for effective use of oral contraceptives, with family planning self-efficacy making the strongest contribution. It is suggested that self-efficacy intervention techniques will benefit oral contraceptive users in preventing unintended pregnancies.

L'auto-efficacité permet-elle de prédire l'efficacité de l'utilisation de la contraception chez les Iraniennes ?

RÉSUMÉ Cette étude a examiné les effets relatifs de l'auto-efficacité sur l'utilisation de la contraception orale dans un échantillon de 352 Iraniennes mariées âgées de 18 à 49 ans. Dans le cadre d'entretiens structurés, cinq variables tirées du modèle des étapes du changement de comportement (connaissance, approbation, intention, pratique et incitation) ont été évaluées et corrélées aux mesures de l'auto-efficacité en matière de planification familiale et de l'auto-efficacité en général. Les résultats ont montré que ces deux mesures indépendantes, si elles sont considérées ensemble, permettent de mieux prédire les intentions comportementales relatives à l'utilisation effective de la contraception orale, l'auto-efficacité en matière de planification familiale étant l'élément qui joue le rôle le plus important. Il semble que les techniques d'intervention fondées sur l'auto-efficacité permettent aux femmes sous contraception orale de mieux éviter les grossesses non désirées.

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Introduction

Over 100 million women around the world use oral contraceptives (OCs) as a family planning method. Many [1]. OCs are unique among contraceptives in that no other method requires the user to act on a daily basis, even when no sexual contact takes place [2].

When used perfectly, OCs have first-year pregnancy rates of less than 1% [2]. However, typical-use pregnancy rates for OCs are generally much higher; national surveys in 21 countries found these rates among OC users ranged from 1.7 pregnancies per 100 women in Bangladesh to 10.5 per 100 women in Bolivia in the first 12 months of use. In the United States of America the pregnancy rate among OC users in 1995 was 6.9 per 100 women over 12 months [3]. Attention has recently focused on users' pill-taking behaviours, especially missed pills. In a clinic-based study of 1167 OC users who were followed for an average of 8 months, 58% reported that they did not take their pills every day [4]. The efficacy of OC is associated with women's use-related behaviours, especially the consistency with which they take pills [5,6].

In the Islamic Republic of Iran, OCs are the most popular contraceptive method, used by 18.4% of married women. However, the last Iran Demographic and Health Survey (IDHS) reported that only 51.5% of women taking OCs used them correctly [7]. An estimated 5.6% of the unintended pregnancies among women of reproductive age (15–49 years) occurred among OC users [7]. Despite this, few studies in the Islamic Republic of Iran have attempted to examine the causes of OC failure.

The Steps to Behavior Change (SBC) model [8] posits that behaviour change among individuals and groups occurs in 5 stages: knowledge, approval, intention, practice and advocacy. The measurement of

intermediate steps or sub-indicators provides opportunities for early assessment for timely corrective action by programme managers. At the same time, research studies have reported significant relationships between an individual's level of self-efficacy and a variety of health-related behaviours [9–11]. Self-efficacy is defined as the personal belief that one can successfully perform a specific action under specified conditions [12,13].

With the aim of providing practical advice for correct use of OCs, we examined contraceptive behaviours using the SBC model variables, and assessed self-efficacy for its impact on these variables within the context of effective use of OCs. We included measures of self-efficacy to increase the predictive accuracy of the behavioural intention variables in the model. It was expected that women who had high scores of self-efficacy would perform to a higher standard than those who reported low self-efficacy.

Methods

Setting and sample

In a cross-sectional study, interviews were carried out during July 2005–June 2006 with women in Mashhad city attending public family planning clinics that offer free contraceptive services. Mashhad has a population of nearly 3 million and is the second city in the Islamic Republic of Iran.

The desired sample size was calculated to be at least 299 subjects, according to Scholz et al. [14], in order to detect an effect size of 1 point (score) on the self-efficacy score with power of 90% and 95% confidence interval. We targeted around 360 women, allowing for a drop-out rate of 20%. Using multi-stage cluster random sampling, women who voluntarily chose OC as their method of birth control were randomly selected from women attending the 4 selected clinics in Mashhad and were

invited to participate in the study. To be included in the study, respondents had to be 18–49 years old, married and sexually active and be able to give informed consent. All 360 women approached completed the questionnaire after giving oral consent. Eight who were non-Iranian were excluded, so 352 women completed the interview.

Data collection

We used trained health workers who were independent of family planning services as interviewers to collect data by face-to-face interview using a structured questionnaire.

The questionnaire was developed to assess 5 variables—knowledge, approval, intention, practice and advocacy—based on the SBC model [8] and to correlate these with measures of family planning self-efficacy and general self-efficacy [15] of Iranian married women. The women's demographic variables were also collected, including age, level of education, employment, self-reported economic status and number of children, pregnancies and unintended pregnancies.

Contraceptive behaviours scales

The assessment of contraceptive behaviours had 5 scales:

- Knowledge was measured with a 16-item scale for recall and understanding of specific instructional points about contraceptive use (e.g. "If vaginal bleeding happens at the beginning of oral contraceptive use, should one stop using pills?"). Responses were coded as 1 (correct) and 0 (incorrect), so the scale had a theoretical value range of 0–16. Test-retest reliability index was 0.95.
- Approval was measured with a 4-item rating scale, consisting of opinions about the usefulness of the contraceptive method, whether the woman discussed the issues with members of her

personal network (family, friends) and her expectation of receiving approval or disapproval from them, and whether she suggested the method to others or not (e.g. "Do you think pills will be/are effective for your main purpose?"). These items were scored on a 3-point scale, range 0–2. Cronbach alpha was 0.82.

- Intention consisted of 2 items which determined the woman's tendency to consult a provider and her practice in the future (e.g. "Do you intend to use the contraceptive pill within the next 6 months?"), ranging from 1 (do not intend) to 3 (do intend) and had an overall reliability coefficient of 0.85.
- Practice was measured with an 8-item rating scale about whether the woman goes to a provider of information/supplies/services, whether she continues the chosen contraceptive method and whether she uses it correctly (e.g. "Are you going to a health centre for family planning checkup?"). Responses were coded 1 (yes) and 0 (no), giving the scale a theoretical value range of 0–8. Test-retest reliability index was 0.82.
- Advocacy was measured with a 4-item rating scale of experiences and acknowledgement of the benefits of the contraceptive practice, advocating the practice to others and supporting family planning programmes in the community (e.g. "It is the whole community's responsibility to solve well planned family health problems together."). Items were scored from 1 (disagree) to 3 (agree) and demonstrated high internal consistency with Cronbach 0.85 and a 2-week test-retest reliability coefficient of 0.78.

The content validity of the instrument was built through making changes suggested by the 12 experts in health education

asked to analyse the items and determine if they adequately represented the hypothetical content in correct proportions. Additionally, 5 OC users and 5 health workers were asked to evaluate the instrument using their judgement about the items. Their comments were then used to make changes in the instrument for the purpose of building its face validity.

To identify reliability of the instrument, stability and internal consistency measures were used. Test–retest was used to determine the stability of the instrument by giving it to 12 participants on 2 different occasions. There was a period of 13–15 days between the first and second administration of the instrument. The Pearson correlation coefficient performed on the test–retest ranged from 0.78 to 0.95.

Self-efficacy scales

The assessment of self-efficacy had 2 scales:

- For the assessment of general perceived self-efficacy, respondents indicated the extent of their agreement with each of 10 statements, using a 4-point scale: 1 (not at all true), 2 (barely true), 3 (moderately true), and 4 (exactly true). The scale has demonstrated high internal consistency with Cronbach alpha ranging from 0.75 to 0.91 [15].
- Based on the general self-efficacy scale, the researchers provided a self-efficacy measure specific to family planning with 5 items. Questions were phrased around the statement “If ..., I can ...”. For example: “If I try enough, I can meet my well-planned family health needs”; “If someone opposes me regarding my well-planned family health needs, I can find ways and means to get what I want”, and “If I try enough, I can meet my well-planned family health information”. Response categories were coded from 1 (not at all true) to 4 (exactly true).

Cronbach alpha for this scale was 0.78. This demonstrated that the measure of self-efficacy was internally consistent.

Ethical issues

The study received ethics committee approval. There were no identifiable risks to the participants. Confidentiality of the information provided by the participants was maintained. Giving personal information such as name, address, and phone number was optional for participants. They were also informed about their right to quit at any time during the study.

Analysis

Descriptive statistics, Spearman correlations and multiple regression analysis were used in the analyses. Spearman correlation was used to assess the significance of bivariate associations between self-efficacy and SBC variables. To further explore the relative importance of the main independent variables in the prediction of intention, we used a standard multiple regression analysis and entered the main variables into the equation. Data were analysed using *SPSS*, version 11.5. Statistical significance was set at $P < 0.05$.

Results

Table 1 shows the characteristics of respondents. The majority of the women were multiparas (59.4%), not employed outside the home (i.e. homemakers) (96.3%), with a moderate level economic status (71.9%). The mean age of the participants was 28.2 [standard deviation (SD) 6.0] years, range 18–46 years. The mean number of children per woman was 2.00 (SD 1.27), range 0–7. Almost two-fifths (18.7%) had ever had an unintended pregnancy and 8.5% of the unintended fertilities had occurred while OC were being used.

The mean scores of the participants for the selected SBC variables—knowledge, approval, intention, practice, advocacy—and for self-efficacy are shown on Table 2. The correlation coefficients indicate a significant correlation between general self-efficacy and family planning self-efficacy ($r = 0.42$, $P < 0.0005$). Analysis of the relationships between self-efficacy and the

other variables show that family planning self-efficacy ($r = 0.70$, $P < 0.0005$) and advocacy ($r = 0.54$, $P < 0.0005$) were the strongest predictors of OC users' intention to follow the correct use of OCs.

In order to further explore the relative importance of the main independent variables in the prediction of intention, we used a standard multiple regression analysis and entered knowledge and approval, family planning self-efficacy and general self-efficacy, practice and advocacy into the equation. From the results, it was clear that this model worked extremely well. Together the independent variables, accounted for 54.4% (53.9% adjusted) of the variance in intention [$F(4, 351) = 103.7$, $P < 0.0005$]. This shows that 54.4% of the total variance in intention of the participants was accounted for by the combination of the 4 variables. The resulting beta weights indicated that although all 4 independent variables made a significant relative contribution to the prediction of behavioural intention, family planning self-efficacy was by far the most significant predictor (Table 3). Advocacy was the next most important influence.

Discussion

In the present study, the results of the correlation analysis showed that both advocacy and family planning self-efficacy had high positive relationships with the behavioural intention to use OCs effectively. The results of the multiple regression analysis also showed that advocacy and family planning self-efficacy, either together or separately, were potent predictors of behavioural intention. The F -ratio value of 103.7, which is significant at $P < 0.0001$, further attests to the fact that the predictive capacity of the independent variables could not be attributed to chance alone. When we examined

Table 1 Demographic characteristics of the women using oral contraceptives (OC) ($n = 352$)

Demographic variable	No.	%
<i>Education level</i>		
Elementary	76	21.6
High school	115	32.7
Diploma	122	34.7
Greater than diploma	26	7.4
Other	13	3.7
<i>Employment status</i>		
Employed	13	3.7
Unemployed	339	96.3
<i>Economic status</i>		
Very good	2	0.6
Good	68	19.3
Moderate	253	71.9
Weak	29	8.2
<i>Duration of OC use (months)</i>		
< 6	148	42.0
6–11	48	13.6
12–23	70	19.9
24–47	46	13.1
≥ 48	40	11.4
<i>No. of living children</i>		
0–1	167	47.4
2–3	160	45.5
≥ 4	25	7.1
<i>Ever had side-effects</i>		
No	106	30.1
Yes	246	69.9
<i>Ever had unintended pregnancy</i>		
No	286	81.3
Yes	66	18.7

Table 2 Descriptive statistics and intercorrelation among the variables for women using oral contraceptives (n = 352)

Variable	Scale range	Mean (SD)	Correlation coefficients						
			Knowledge	Approval	Intention	Practice	Advocacy	General self-efficacy	Perceived FP self-efficacy
Knowledge	0-16	6.50 (1.75)	-	-	-	-	-	-	-
Approval	0-8	4.37 (1.63)	0.23**	-	-	-	-	-	-
Intention	0-6	4.67 (0.86)	0.36**	0.23**	-	-	-	-	-
Practice	0-8	4.29 (0.85)	0.25**	0.19*	0.37**	-	-	-	-
Advocacy	0-12	4.65 (0.72)	0.30**	0.26**	0.52**	0.36**	-	-	-
General self-efficacy	0-40	21.64 (3.19)	0.16**	0.23*	0.26**	0.20**	0.23**	-	-
Perceived FP self-efficacy	0-20	10.90 (1.54)	0.32**	0.26**	0.70**	0.37**	0.54**	0.42**	-

*P < 0.05; **P < 0.01.

SD = standard deviation.; FP = family planning.

the extent to which each of the 4 independent variables contributed to the prediction, family planning self-efficacy was the best predictor of behavioural intention among the participants in this study.

Our findings corroborate those of Bradford and Beck [16], Heinrich [17] and Levinson [18] which indicated the importance of self-efficacy in the careful use of contraception; hence, individuals with higher self-efficacy are more likely to use contraception to avoid an unintended pregnancy. We found that family planning self-efficacy was a better predictor of intention (i.e. effective use of OCs) than general self-efficacy. This is consistent with Bandura's finding that specific self-efficacy measures are more effective in predicting what people will do in specific circumstances than general (trait) aspects of self-efficacy [13]. A previous study also showed that those who had displayed higher levels of preventive sexual self-efficacy, i.e. more confidence in their ability to use contraceptive methods, were more successful in avoiding unintended pregnancy [19]. The findings of Herold et al. [20], Neel et al. [21] and Rosen and Ager [22] provide additional support to the present findings: they stated that understanding one's own ability to regulate and manage will have an effect on contraceptive behaviour.

The finding that self-efficacy is a potent predictor of behavioural intention could be attributed to the fact that a strong sense of efficacy enhances the ability to cope with barriers. People with a low sense of efficacy, on the other hand, have a tendency to view things as if they are tougher than they really are and have a myopic vision of how best to tackle problems. Supporting the positive impact of self-efficacy on contraceptive use, and as pointed out by Bandura, self-efficacy refers to an individual's belief that he or she has the skills to control his or

Table 3 Relative contribution of independent variables to the prediction of behavioural intention for women using oral contraceptives

Predictor	Standardized coefficient	t-value	P-value
Beta			
Family planning			
self-efficacy	0.577	12.997	< 0.0001
Advocacy	0.152	3.527	< 0.0001
Knowledge	0.081	2.061	0.040
Practice	0.081	2.012	0.045

her own behaviour to achieve the desired outcome or goal [12,23].

Our results also indicate that knowledge was an important predictor of intention for this sample. This is consistent with previous research that reported women's knowledge about some modern methods and approval of family planning were the factors most predictive of intended contraceptive use [24–26]. Also Bailey et al. stated that OC users who receive information and support from their providers have higher continuation rates than other users [27]. This could provide a basis for an intervention strategy to improve communication by providers of the competencies required, for example, through clinical guidelines that include counselling strategies, thus making counselling more efficient.

In our study, the direction of relationships indicated that self-efficacy scores were associated with practice. This is consistent with previous research in America by Prussia et al. that examined the mediating effects of self-efficacy on the relation between self-leadership (ability to achieve the motivation and direction needed to accomplish desirable outcomes) and performance [28]. The results indicated that self-efficacy directly affected performance.

Bandura stated that people with low efficacy used avoidance coping strategies and

people with high efficacy used problem-focused coping strategies [29]. His findings suggest that people low in self-efficacy are not as independent as others because they tend to avoid tackling specific difficulties. Among such cases, poor performance can be attributed to a lack of planning, which by itself is related to low self-efficacy, i.e. their expectation of poor outcomes [29]. Some studies mentioned that perceived self-efficacy has been shown to play a significant role in health behaviour, and the effects of interventions on health behaviour are partly mediated by changes in perceived self-efficacy [10,11,30].

We suggest that our findings could be used as the basis for interventions designed to enhance performance in OC use. In particular, we suggest that identification of persons who have low self-efficacy should be prioritized. Then, as suggested by Guthrie et al. [31], providers should promote self-care ability and self-efficacy related to effective OC use by clients. Rote knowledge is insufficient, since contraceptive use requires an ability to generalize and solve problems under unanticipated circumstances, [4]. However, knowledge-behaviour correlations increase among those who increase their self-efficacy and decrease among those who decrease it [32].

Interventions could involve making modifications to existing practice. Providers typically give support for women through counselling sessions and providing feedback on the strengths and limitations of their practice. However, clients with low self-efficacy tend to adopt avoidance coping strategies, and such feedback can further damage self-efficacy. Thus it is crucial for providers to give positive feedback to clients low in self-efficacy, with specific tasks on which clients can compare their progress to an agreed-upon goal. Goal attainment can lead to a perception of progress, and this strengthens

self-efficacy, which in turn should motivate clients to continue to improve [33].

A second approach to raising self-efficacy could be for providers to encourage clients to develop support groups. Providers could speak with all clients together, and encourage problem-solving practice among groups, and help share problems. It is suggested that self-efficacy could be enhanced through observing others perform successfully [29,34].

In conclusion, the results of the present study showed significant relationships between self-efficacy measures and contraceptive behaviours. We suggest that measures of

self-efficacy could be used to identify clients at risk of failing to use OCs and encouraging health providers to develop individualized programmes of support for clients.

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