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Susceptibility of Women of Reproductive Age to Overweight and Obesity and Their Causes

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The purpose of the work was to study the predisposition of women of reproductive age to overweight and obesity, as well as the reasons that contribute to the formation of these conditions.

Materials and methods. With the help of the Women's Health Questionnaire, a survey was conducted among women in Baku. The questionnaire included a block of questions reflecting the state of women's predisposition to overweight and obesity and contributing to their causes, as well as women's needs for relevant information. 4,000 questionnaires were distributed, 2,838 questionnaires were collected (71.0%), of which 1,748 questionnaires contained answers to all questions (61.6%), the analysis of which was carried out in this study. The age of women ranged from 16 to 47 years, all respondents were of Azerbaijani nationality.

Results and discussion. Overweight was found in $15.6 \pm 0.9\%$ of women, various degrees of obesity – in $25.5 \pm 1.0\%$ ($P < 0.001$). Women in the questionnaires noted 13 main reasons for the formation of overweight and obesity, for 1 woman with normal body weight there were an average of 2.06 ± 0.21 reasons, for overweight women – 4.19 ± 0.23 reasons ($P < 0.001$), for obese women – 5.42 ± 0.22 reasons ($P < 0.001$). The first group of women expressed the need for an average of 2.51 ± 0.28 forms of information on the control and correction of overweight and obesity, the second group – 5.43 ± 0.35 forms, respectively ($P < 0.001$), the third group – 8.01 ± 0.32 forms. It was also found that the possible reasons of formation of overweight and obesity are common to all groups of women surveyed, however, there are differences in their frequencies: a number of indicators of frequency of causes of overweight women significantly exceed a similar number of indicators of women with normal weight, and a number of indicators of women with obesity – a number of indicators of overweight women, respectively. Low physical activity is recognized as the main cause of weight gain. It is no coincidence that the surveyed women were primarily interested in information about the body's daily need for physical activity. Taking into account the modern rhythm of life of urban women (work, household, raising children), which creates difficulties in special physical activities, they were very interested in information about the possibility of covering the body's daily needs by moderate walking.

Conclusion. The prevalence of overweight and obesity among women can be limited through available

outreach work on an ongoing basis and appropriate information support. For this purpose, it is necessary to activate the assistance bodies for the control and correction of overweight and obesity among women.

Keywords: women, overweight, obesity, information, correction.

Introduction. Currently, overweight and obesity are one of the important medical problems. The prevalence of these conditions in the world is steadily increasing, acquiring the character of a pandemic. Overweight and obesity are acquiring the status of leading risk factors for noncommunicable diseases and mortality. In 2014, 10% of men and 14% of women aged 18 years and older suffered from obesity, overweight was observed in almost 40% of the world's population [1, 2, 3]. Obesity is a risk factor for the development of various obstetric complications (arterial hypertension, gestational diabetes mellitus, premature rupture of birth membranes, fetal hypoxia, etc.) and is associated with an increase in maternal and perinatal morbidity and mortality (high frequency of preterm birth, lower Apgar score of newborns, need for treatment of newborns in intensive care, hypoglycemia and macrosomia of newborns) [4, 5, 6]. In general, overweight and obesity seriously complicate the reproductive function of women [7].

However, in the problem of overweight and obesity, a number of issues require special study. This applies both to the assessment of the reliability of methods for calculating overweight and obesity [8, 9], and their actual role in burdening women's reproductive health [10, 11].

For the purpose of rational prevention among the population, including women, it is important to identify the reasons leading to an increase in body weight, and these reasons may have a regional and ethnic nature [12, 13]. In this regard, the purpose of this research was to study the predisposition of women of reproductive age to overweight and obesity and their reasons.

The purpose of the work was to study the predisposition of women of reproductive age to overweight and obesity and their reasons.

Materials and methods. A free anonymous sociological prospective study was conducted among reproductive women in Baku. Based on the international standardized WHQ questionnaire proposed by M. Hunter [14], an Azerbaijani version of the questionnaire adapted to local conditions was developed. The questionnaire

consists of 9 blocks of questions (98 questions in total), 3 of which reflected the age, height and weight of women, the state of their levels of education and medical awareness.

Questionnaires in Azerbaijani and Russian were distributed to parents (women) in preschool institutions, schools and children's clinics in Sabail, Yasamal, Sabunchi and Azizbek districts of Baku. Heads, educators, teachers and medical workers of these institutions took an active part in the distribution of questionnaires and their return collection, and they themselves also filled out questionnaires and involved relatives and neighbors in questioning. In total, 4,000 questionnaires were distributed, 2,838 questionnaires were collected back ($71.0 \pm 0.7\%$), of which 1,748 questionnaires fully contained answers to the questions asked ($61.6 \pm 0.9\%$). The age of the women ranged from 16 to 47 years old and they were all of Azerbaijani nationality.

The study was carried out in compliance with the basic provisions of the "Rules of ethical principles of scientific medical research with human participation", approved by the Declaration of Helsinki (1964-2013), ICH GCP (1996), EEC Directive No. 609 (dated 24.11.1986), Orders of the Ministry of Health of Ukraine No. 690 (dated 23.09.2009), No. 944 (dated 14.12.2009), No. 616 (dated 03.08.2012). All the participants were informed about the goals, organization, methods of examination and signed an informed consent to participate in the completely anonymous study.

Overweight was calculated using the Quetelet index [16]. Statistical processing of the results was carried out using the Student's test [17].

Results and discussion. Normal body weight, according to the Quetelet index, should not exceed 25.0 kg/m^2 . The number of women with normal body weight according to the results of the questionnaire analysis was $59.1 \pm 1.2\%$, with overweight ($25.0\text{--}29.9 \text{ kg/m}^2$) there were $15.5 \pm 0.9\%$ of women ($t=29.0$; $P<0.001$), with obesity of I degree ($30.0\text{--}34.9 \text{ kg/m}^2$) – respectively $12.8 \pm 0.8\%$ of women ($t=2.17$; $P<0.05$), with obesity of II degree ($35.0\text{--}39.9 \text{ kg/m}^2$) – $10.4 \pm 0.7\%$ of women ($t=2.26$; $P<0.05$) and with obesity of III degree ($\geq 40.0 \text{ kg/m}^2$) – $2.1 \pm 0.3\%$ of women ($t=10.92$; $P<0.001$). In general, $25.5 \pm 1.0\%$ of women turned out to have various degrees of obesity. As can be seen, overweight and obesity are quite common among the local population of women.

Women in the questionnaires and during individual contacts noted a large number of subjective and objective reasons that contribute to the formation of overweight and obesity in them. Similar reasons, which in the future may form similar conditions in them, were noted even by women with normal body weight. We have selected 13 reasons that can play both a primary and a secondary role in the formation of overweight and obesity. The list and frequency of detection of these reasons are summarized in **Table 1**.

Table 1 – List and frequency of causes noted by women as possible risk factors for the formation of overweight and obesity

List of reasons	Total reasons		Frequency of causes among women of different body weight					
			Norm		Overweight		Obesity	
			$<25.0 \text{ kg/m}^2$		$25.0\text{--}29.9 \text{ kg/m}^2$		$\geq 30 \text{ kg/m}^2$	
	n=1748		n=1033		n=273		n=442	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Heredity	347	19.9 ± 1.0	121	11.7 ± 1.0	70	25.6 ± 2.6	156	35.2 ± 2.3
Predisposition	252	14.4 ± 0.8	96	9.3 ± 0.9	38	13.9 ± 2.1	118	26.7 ± 2.1
Insufficient physical activity	631	36.1 ± 1.1	227	22.0 ± 1.3	136	49.8 ± 3.0	268	60.6 ± 2.3
Irrational nutrition	653	37.4 ± 1.1	242	23.4 ± 1.3	144	52.7 ± 3.0	267	60.4 ± 2.3
Taste habits	567	32.4 ± 1.1	266	25.7 ± 1.4	105	38.5 ± 3.0	196	44.3 ± 2.4
Harm of weight loss for health	209	12.0 ± 0.8	63	6.1 ± 0.7	45	16.5 ± 2.3	101	22.9 ± 2.0
Difficulty following a diet	631	36.1 ± 1.1	262	25.4 ± 1.4	116	42.5 ± 3.0	253	57.2 ± 2.4
Lack of awareness	332	19.0 ± 1.0	148	14.3 ± 1.1	58	21.2 ± 2.5	126	28.5 ± 2.1
Ignorance of overweight correction measures	253	14.5 ± 0.8	71	6.9 ± 0.8	51	18.7 ± 2.4	131	29.6 ± 2.2
Frequent pregnancy	395	22.6 ± 1.0	143	13.8 ± 1.11	84	30.8 ± 2.8	168	38.0 ± 2.3
Big family	348	19.9 ± 1.0	132	12.8 ± 1.01	68	24.9 ± 2.6	148	33.4 ± 2.2
Indifference to appearance	430	24.6 ± 1.0	120	10.6 ± 1.0	110	40.3 ± 3.0	210	47.5 ± 2.4
Concomitant morbidity	624	35.7 ± 1.0	252	24.4 ± 1.3	118	43.2 ± 3.0	254	57.5 ± 2.4
Sum of reasons	5672		2133		1143		2396	
On average per 1 woman	3.24 ± 0.19		2.06 ± 0.21		4.19 ± 0.23		5.42 ± 0.22	

The whole group of women surveyed is characterized by the most frequent mention of such possible risk factors for the formation of overweight and obesity as insufficient physical activity, irrational nutrition, taste habits, difficulty dieting and concomitant morbidity. The frequency of their mentions varies from 32.4 ± 1.1 to $37.4 \pm 1.5\%$ ($t=3.21$; $P<0.01$). Heredity, lack of medical awareness, large family size and indifference to one's appearance are mentioned less frequently – from 19.0 ± 1.0 to $24.6 \pm 1.0\%$ ($t=3.97$; $P<0.001$). Even less often, women mention predisposition to overweight and obesity, harm of weight loss for health and ignorance of measures to correct overweight and obesity – from 12.0 ± 0.8 to $14.4 \pm 0.8\%$ ($t=2.12$; $P<0.05$).

The noted possible reasons for the formation of overweight and obesity are common to all groups of women surveyed, however, there are significant differences in their frequencies. For example, a number of indicators of the frequency of reasons of women with overweight significantly exceeds a similar number of indicators of women with normal body weight, and a number of indicators of women with obesity – a number of indicators of women with overweight, respectively. It is no coincidence that there are 5.42 ± 0.22 reasons on average per 1 woman with obesity, while there are only 4.19 ± 0.23

reasons per 1 woman with overweight ($t=3.84$; $P<0.001$), and their minimum number falls on women with normal body weight – 2.06 ± 0.21 reasons ($t=6.87$; $P<0.001$), i.e. by eliminating the root causes, weight loss can be achieved in women who want to get a similar result.

Contacts with women show that many of them want to normalize their body weight, but in the conditions of absence of active explanatory work on measures to correct body weight, information scarcity and poor preparedness of polyclinic doctors on this issue, they did not achieve the desired result. In particular, 96 of 442 women with obesity ($21.7 \pm 2.0\%$) and 32 of 273 women with overweight ($11.7 \pm 1.9\%$; $t=3.62$; $P<0.001$) kept to diet at different times, did morning exercises, even visited fitness clubs, but did not bring them to the end. Therefore, all women expressed a wide range of needs for relevant information (Table 2).

Low physical activity is recognized as the main reason of weight gain. It is no coincidence that the surveyed women were primarily interested in information about the body's daily need for physical activity – $44.7 \pm 1.2\%$ of mentions. Taking into account the modern rhythm of life of urban women (work, household, raising children), which creates difficulties in special physical activities, they were very interested in information about the possi-

Table 2 – Women's need for information on the control and correction of overweight and obesity

List of information needs	Frequency of information needs in different groups of women							
	Norm		Overweight		Obesity		Total	
	n=1033		n=273		n=442		n=1748	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Overweight calculation method	173	16.7 ± 1.2	126	46.2 ± 3.0	286	64.7 ± 2.3	585	33.5 ± 1.1
Significance of overweight for health	266	25.8 ± 1.4	112	41.0 ± 3.0	267	60.4 ± 2.3	645	36.9 ± 1.2
Overweight risk factors	203	19.7 ± 1.2	139	50.9 ± 3.0	291	65.8 ± 2.3	633	36.2 ± 1.1
Measures to correct overweight risk factors	125	12.1 ± 1.0	64	23.4 ± 2.7	183	41.4 ± 2.3	372	21.3 ± 1.0
Energy value of food	149	14.4 ± 1.1	76	27.8 ± 2.7	201	45.4 ± 2.3	426	24.4 ± 1.0
Standards of energy value of daily food	116	11.2 ± 1.0	133	48.7 ± 3.0	315	71.3 ± 2.2	564	32.3 ± 1.1
Method of calculating the energy value of food	91	8.8 ± 0.9	129	47.3 ± 3.0	302	68.3 ± 2.2	522	29.9 ± 1.1
Body's need for physical activity	239	26.0 ± 1.4	182	66.7 ± 2.9	360	81.4 ± 1.9	781	44.7 ± 1.2
Role of walking in replacing physical load	356	34.5 ± 1.5	164	60.1 ± 3.0	377	85.3 ± 1.7	897	51.3 ± 1.2
Means of weight loss	147	14.2 ± 1.1	107	39.2 ± 3.0	311	70.4 ± 2.2	565	32.3 ± 1.1
Specialization of doctors on the problem of overweight and obesity	183	17.7 ± 1.2	78	28.6 ± 2.7	170	38.5 ± 2.3	431	24.7 ± 1.0
Increasing of the role of the media in the fight against overweight	296	28.7 ± 1.4	51	18.7 ± 2.4	175	39.6 ± 2.3	522	29.9 ± 1.1
Information booklets on overweight correction measures	253	24.5 ± 1.4	121	44.3 ± 3.0	304	68.8 ± 2.2	678	38.8 ± 1.2
Sum of demand units	5672		2133		1143		2396	
Average number of demand units per 1 woman	2.51 ± 0.28		5.43 ± 0.35		8.01 ± 0.32		4.36 ± 0.24	

bility of covering the daily needs of the body by moderate walking – $51.3 \pm 1.2\%$ of mentions ($t=3.88$; $P<0.001$). Quite often women expressed the need for information about the method for calculating overweight and obesity, their significance for health, risk factors and measures to correct them, energy value of food, method for calculating the energy value of food and its daily standards, means for losing weight, increasing the role of the media in the fight against overweight and obesity, publication of booklets on the control and correction of overweight and obesity, and specialization of doctors on this issue – from 21.3 ± 1.0 to $38.8 \pm 1.2\%$ of mentions ($t=11.22$; $P<0.001$). Particularly high need for information on this issue was expressed by women with obesity, each of whom noted an average of 8.01 ± 0.32 forms of information. Among women with overweight, their number decreases to 5.93 ± 0.35 forms ($t=5.38$; $P<0.001$), and among women with normal body weight – to 2.51 ± 0.28 forms, respectively ($t=6.49$; $P<0.001$). The results of our study

coincide with the data of a number of authors, who in their works also emphasize the need to inform people with overweight or with a tendency to overweight [8, 17]. It should be noted that, despite numerous evidences of the adverse effects of obesity stigmatization, only a few works have studied strategies to reduce stereotypes and prejudices regarding obesity [18], so the issue of informing the population on this problem is still relevant.

Conclusion. The further spread of overweight and obesity among women can be prevented through available outreach work on an ongoing basis which takes into account the reasons that women believe contribute to overweight and obesity, as well as providing them with relevant information on measures to control and correct these conditions. Such work should become a priority in the activities of obstetric bodies.

Perspectives of further research. In the future, it is planned to study the molecular pathways of overweight in women of reproductive age.

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СХИЛЬНІСТЬ ЖІНОК РЕПРОДУКТИВНОГО ВІКУ ДО НАДЛИШКОВОЇ МАСИ ТІЛА І ОЖИРІННЯ ТА ЇХ ПРИЧИНИ

Мехтієва А. Ф., Джафарова А. Г., Нагієва Р. Г.

Резюме. Мета роботи. Вивчення схильності жінок репродуктивного віку до надлишкової маси тіла та ожиріння, а також причин, що сприяють формуванню цих станів.

Матеріали та методи. За допомогою опитувальника Women's Health Questionnaire провели анкетування серед жінок Баку. В анкеті був включений блок питань, що відображає стан схильності жінок до надлишкової маси тіла та ожиріння і сприяють їх причинам, а також потреб жінок у відповідній інформації. Було роздано 4000 анкет, назад зібрано 2838 анкети, (71,0%), з них 1748 анкет повністю містили відповіді на всі запитання (61,6%), аналіз яких було проведено у цьому дослідженні. Вік жінок варіював від 16 до 47 років, усі респонденти були азербайджанської національності.

Результати. Надлишкова маса тіла виявлена у 15,6±0,9% жінок, різні ступені ожиріння - у 25,5±1,0% (P<0,001). Жінки в анкетах відзначили 13 основних причин формування надлишкової маси тіла та ожиріння, на 1 жінку з нормальною масою тіла довелося в середньому 2,06±0,21 причин, на жінок з надлишковою масою тіла – 4,19±0,23 причин (P<0,001), на жінок з ожирінням – 5,42±0,22 причин (P<0,001). Перша група жінок висловила потребу в середньому у 2,51±0,28 формах інформації з контролю та корекції надлишкової маси тіла та ожиріння, друга група відповідно у 5,43±0,35 формах (P<0,001), третя група – у 8,01±0,32 форм. Також встановлено, що можливі причини формування надмірної маси тіла та ожиріння притаманні всім групам анкетованих жінок, однак у їх частотах є виражені відмінності: ряд показників частот причин жінок з надмірною масою тіла достовірно перевищує аналогічний ряд показників жінок з нормальною масою тіла, а ряд показників жінок з ожирінням відповідно ряд показників жінок із надлишковою масою тіла. Низька фізична активність визнається основною причиною підвищення маси тіла. Не випадково, в анкетованих жінок насамперед цікавила інформація про добову потребу організму у фізичній активності. Враховуючи сучасний ритм життя міських жінок (робота, домашнє господарство, виховання дітей), що створює труднощі у спеціальних фізичних заняттях, їх дуже цікавила інформація про можливість покриття добової потреби організму шляхом помірної ходьби.

Висновки. Шляхом доступної роз'яснювальної роботи на постійній основі та відповідному інформаційно-забезпеченні можна обмежити поширеність надлишкової маси тіла та ожиріння серед жінок. З цією метою необхідна активізація органів допомоги з контролю та корекції надлишкової маси тіла та ожиріння серед жінок.

Ключові слова: жінки, надлишкова маса тіла, ожиріння, інформація, корекція.

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