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### Prevalence of symptoms of gastroesophageal reflux disease and irritable bowel syndrome among Yakutsk population

#### Abstract

The authors reveal a high frequency of symptoms of gastroesophageal reflux disease and irritable bowel syndrome in the elderly population of Yakutsk. They also found out in their studies the differences in the frequency of GERD and IHD according to ethnicity and gender.

**Keywords:** gastroesophageal reflux disease, irritable bowel syndrome, elderly and senile age, the urban population.

**Introduction:** According to epidemiological studies prevalence of symptoms gastroesophageal reflux and irritable bowel syndrome is high – 20 – 40% of population). Almost half of adult population have gastroenterological symptoms, major part of these symptoms are functional, without morphological substratum. Sickness of digestion organs inflict significant economic damage to a society [1,2,3].

The problem of gastrointestinal disorder of elderly population in the conditions of the North is topical, because it is investigated not enough.

**The research objectives:** to investigate spread of symptoms of gastroesophageal reflux and irritable bowel syndrome among the Yakutsk population of 60 and senior.

**Materials and methods:** the research has been carried according to scientific program “Epidemiology of some chronic non-infectious diseases and risks of elderly population of Yakutsk”. The object of investigation is the population of Yakutsk at the age of 60 and senior. The sample was done by method of casual numbers with the help of a computer program. The sample consists of 1394 respondents (200 – masculine, 200 – female in each age group of 60-89 years old and 194 people of the most elderly population). So the sample includes 7,6% of the whole number of elderly population of Yakutsk.

In the whole 775 people were investigated (response 71,6%). 379 people were included into



the data base for analysis of gastroesophageal reflux and 346 people of irritable bowel syndrome. Patients were divided into age groups (60-69, 70-79, 80-89 and more than 90 years old). Also according to gender indication they were divided into masculine, and female. Two race-ethnic groups were indicated: indigenous (Yakut, Even) and non-indigenous (Russian, Ukrainian, Belorussian etc.). Practically indigenous and non-indigenous inhabitants of Yakutsk gave the same responds. The most active respondents were people of 60-89 years old ( $p < 0,001$ ).

The research has been held in Republican Hospital and Geriatric Center of the Republican Hospital 3 in Yakutsk. People of 80 and senior, some patients of 60 and senior who could not be transported were examined by visiting them at their permanent houses. The most elderly population (90 and senior) was examined in Geriatric center of Republican hospital 3.

The research was approved by Ethical Committee of Yakutsk Scientific Center of the Siberian Branch of the Russian Academy of Medical Sciences (protocol 97, March 30, 2011). All respondents signed the informational agreement of participation in the research.

556 respondents were chosen (200 in each age group) for gastrointestinal symptoms among them: 235 males and 321 females, indigenous - 254 (45,7%) and non-indigenous - 302 (54,3%).

Table 1. Data of respondents according to sexual, age and ethnic groups

Age	N	%	masculine	%	female	%	indigenou s	%	Non- indigenou s	%
60-69 years	182	32,7	81	34,4	101	31,4	66	25,9	116	38,4
70-79 years	184	33,1	83	35,3	101	31,4	90	35,4	94	31,1
80-89 years	129	23,2	56	23,8	73	22,7	69	27,1	60	19,8
90 и < more	61	11,0	15	6,3	46	14,3	29	11,4	32	10,5
n	556	100	235	42,2	321	57,7	254	45,7	302	54,3

As it is shown in Table 1, respondents of 60-69 years old are 32,7 % (182 people), respondents of 70-79 - 33,1% (184 people), 80-89 years old – 23,2% (129 people), 90-more years old – 11,0% (61 people). Among them indigenous people were 254 (45,7%), including masculine – 127 (54,0%), female – 127 (39,6%). Non-indigenous were 302 people (54,3%), including masculine – 108 (46,0%), female – 194 (60,4%).

Results of investigation: according to Picture 1, the frequency of GER is 68,1% (379 people)



and IBS – 62,2% (346 people).

Fig. 1. Frequency of GER according to ethnic group including gender (%)

(Total, men, women, indigenous, non-indigenous)

Statistically significant results according to gender are revealed among population of 60 and senior: women – 56,7% (215 people) and men – 43,2% (164 people) ( $p < 0,05$ ). Statistically significant results according to ethnic indication are revealed: non-indigenous – 53,2% (202 people) and indigenous – 30,8% (117 people) ( $p > 0,01$ ), (pic.1). IBS is frequently diagnosed among female than the masculine (63,5% against 36,4%,  $p < 0,01$ ) and among non-indigenous than indigenous (53,4% against 46,5%,  $p < 0,05$ ).

Fig. 2. Frequency of GER and IBS according to ethnic group including gender (%)

(GER, men, women, IBS men, women, indigenous, non-indigenous)

As it is shown in Picture 2, GER is more often revealed among non-indigenous women (60,4%) than indigenous female (39,5%),  $p < 0,01$ . There are no clear differences among males. IBS is frequently diagnosed among non-indigenous female 58,1% against indigenous female 45,2%,  $p = 0,002$  and indigenous males (54,7%) against non-indigenous males (41,8%,  $p = 0,005$ ).

Fig. 3. Frequency of GER and IBS according to age (%)

As it is shown in Pic.3 the reduction of symptoms is revealed in age group of 60-90 olds: GER from 30,8% to 12,4% and IBS from 32,3% to 13,8%.

Fig. 4. Frequency of heartburn and regurgitation among Yakutsk population aged of 60 and senior (%)

$P < 0,0001$

$P < 0,01$

As it is shown in Fig.4, 202 (36,4%) respondents suffer of acid. It was noticed that epigastric



pains statistically significant for women – 38,6% (124 people), for men – 33,1% (78%),  $p < 0,0001$ , for non-indigenous – 37,7% (114), indigenous – 34,6% (88 people),  $p = 0,01$ . There are differences among non-indigenous women 38,1% (74 people) and 31,5% (40 people),  $p = 0,0001$ , but there is no difference among indigenous people.

Regurgitation is educed at 147(26,4%%) respondents, according to gender statistically meaningful results are revealed for women 30,8%% (99 persons) against 20,4%% (48 persons),  $p = 0,0001$ , ethnic distinctions are not gotten. Reliable distinctions are educed on ethnic belonging of non-indigenous women 40,1%% (51 persons) against 20,4%% (26 persons)  $p = 0,01$ , non-indigenous women 24,7%% (48 persons) against 22,0%% (22 persons),  $p = 0,0001$ .

Table 2. Distribution of frequency of symptoms of GER on the age-related group (%)

Age of group	Number	Male	Female	Indigenous	Non-indigenous							
	Heartburn	%	Regurgitation	%	Heartburn	Regurgitation	Heartburn	Regurgitation	Heartburn	Regurgitation	Heartburn	Regurgitation
60-69	75	37,1	56	38,0	37,1	35,4	37,0	39,3	30,6	36,3	42,1	40,0
70-79	67	33,1	46	31,2	38,4	31,2	29,8	31,3	34,0	24,6	32,4	38,5
80-89	41	20,2	30	20,4	17,9	27,0	21,7	17,1	27,2	27,2	14,9	12,8
90 и <	19	9,4	15	10,2	6,4	6,2	11,2	12,1	7,9	11,6	10,5	8,5
n	202	36,4	147	26,4	33,1	20,4	38,6	30,8	34,6	30,3	37,7	23,1

As it is shown in Pic.2 the reduction of frequency of heartburn is revealed in age group of 60-90 years among women from 37,0% to 11,2%, and among men from 38,4% to 6,4%, among indigenous from 34,0% to 7,9% and among non-indigenous from 14,1% to 4,8%,  $p < 0,03$ .

The reduction of regurgitation is revealed in age group of 60 and 90 among men from 35,4% to 6,2%, among women from 39,3% to 12,1% and among indigenous from 36,3% to 11,6%, among non-indigenous from 40,0% to 8,5%.

Fig.4. Frequency of GER (%)



Monthly heartburn is observed for 25,0% respondents (24,6% male and 24,6% female; 25,1% indigenous and 24,8% non-indigenous). Weekly heartburn is revealed at 11,3% patients (6,2% for men, 13,3% women,  $p < 0,001$ ) and (9,4% for indigenous, 12,9% for non-indigenous,  $p < 0,05$ ).

Monthly sour belch is reduced for 20,6% of patients (16,1% for men, 23,9% for women, 25,1% indigenous and 16,8% non-indigenous). Weekly and more often sour belch is observed for 5,7% of respondents (4,2% for men, 6,8% for women,  $p > 0,03$ ) and 5,1% for indigenous, 6,2% for non-indigenous,  $p > 0,04$ ).

Dysphagia is revealed for 6,8% respondents (5,5 % for men and 7,7% for women,  $p > 0,04$ ) and (2,8% for natives and 3,9% non-native).

Table 3. Symptoms of bowel disorders according to ethnicity and sex

Symptoms	number	men	women	indigenous	non-indigenous	P m-w	P i-n						
		n	%	n	%	n	%	n	%	n	%		
Swelling of stomach		231	41,5	83	35,3	148	46,1	113	44,4	118	39,0	0,0001	
Defecation less than 3 times a week		113	20,3	35	14,9	78	24,3	51	20,0	62	20,5	0,0001	
Defecation more than 3 times a day		34	6,2	17	7,2	17	5,3	17	6,7	17	5,6		
Difficulties of defecation		226	40,6	78	33,2	148	46,1	100	39,3	126	41,7	0,0001	0,01
Diarrhea		114	20,5	47	28,5	67	14,6	56	22,0	58	19,2	0,008	
Hard stool		231	41,5	76	32,3	155	48,2	105	41,3	126	41,7	0,0001	0,05
Mucus in stool		42	7,6	12	5,1	30	9,3	24	9,4	18	5,9	0,0001	
Feeling of incomplete bowel movement		149	26,8	43	18,3	106	33,0	63	24,8	86	28,4	0,0001	0,008

From the table 3 it is evidently seen that swelling of stomach was observed for 41,5% respondents (231 persons), more often it is marked for 46,1% women than for men (46,1% and 35,5% accordingly,  $p < 0,0001$ ) and for indigenous 44,4% and for non-indigenous 39,0%. Swelling of stomach is reduced at people from 60 to 90 years old. Defecation less than 3 times a week was



noticed for 6,2% (34 persons), there is no sexual and ethnic differences. There was reduction of diarrhea according to age. Defecation less than 3 times a week was marked for 20,3% (113 persons) of respondents, more often for women- 24,3% (78 persons) than for men 14,9% (35 persons),  $p < 0,0001$ .

Frequency of locks is revealed for 27,4%% (31 persons) from 19,4%% (22 persons) in age from 60 to 90. Most of symptoms of bowel disorders were more often observed for non-indigenous people, so for women to men. These results are not for frequency of stool more than 3 times a day and mucus in stool. It is noticed that indigenous people suffer from constipation - 14.6%, from diarrhea - 1.3%, alternating constipation and diarrhea - 2.9%. Among non-indigenous people constipation is noticed for 19.4%, diarrhea - 1.4%. Alternation of them - 2.7%. Thus, non-indigenous women have more often constipation - 24.4% than that of indigenous women.

### Conclusions:

1. High-frequency of symptoms of GER and IBS is reduced among the elderly population of Yakutsk.
2. High-frequency of symptoms of GER and IBS is totally reduced for women and for non-indigenous population.
3. Symptoms of GER and IBS are decreased for people of 60 and elder according to gender and ethnicity.

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### Features of the ratio of collagen I and III in patients with postoperative ventral hernias

Modern herniology presents innovational field of surgery. Among the causes of hernia development the disturbance of collagen metabolism plays a great role, and leads to heterogeneous maturation of the connective tissue and disorder of its structural characteristics. Investigation of the collagen contents of the connective tissue with the help of polarization microscopy reveals Collagen Type I to Type III ratio in skin and aponeurosis in patients with and without hernia disease. Presented investigation makes prognosis and prophylactics of hernia disease possible in early post operation period.

**Keywords:** Collagen Type I and Type III, post operation hernia, hernia disease, polarization microscopy.

**Introduction.** Nowadays treatment of abdominal anterior wall hernia disease is the actual problem of surgery. Among all surgical operations hernioplastics presents up to 32%, ventral hernias (VH) contribute 26%, 35% of the latter ones are urgently operated due to squeezing. 10 – 14% of all laparotomies are complicated in the late post operation period with VH of abdominal anterior wall. According to the opinion of certain authors [1,2,3,4,7] the rate of mediate VH continues to increase, presenting from 57 to 83% of whole quantity of anterior wall of the abdomen hernias. Despite of wide application of modern surgical techniques in clinical practice, the results of VH treatment cannot be accepted as satisfactory ones. It's well known that collagen metabolism disorders lead to the weakness of the connective tissue, and later to VH development. Collagen metabolism