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QUALITY OF LIFE, MENTAL HEALTH AND SLEEP DISORDERS IN OBESE PEOPLE OF WORKING AGE

V.TKACHENKO, T.BAGRO

Shupyk National Healthcare University of Ukraine, Kyiv, Ukraine

Tkachenko Victoria – <https://orcid.org/0000-0002-0789-5340>

Bagro Taisiia – <https://orcid.org/0000-0001-6881-8229>

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Quality of life, mental health and sleep disorders in obese people of working age

V. Tkachenko, T. Bagro

Shupyk National Healthcare University of Ukraine, Kyiv, Ukraine

The prevalence of obesity is growing every year being a risk factor for many non-communicable diseases. The etiological factors of obesity are mainly nutritional factor and physical inactivity, but mental health, quality of sleep and life of patients are of great importance, especially during the COVID-19 pandemic in the world.

Purpose: to determine the relationship between mental health disorders, drowsiness, sleep and life quality of obese patients of basic working age.

Methods. The randomized cohort study included 2 groups of patients: the main one - with obesity (BMI = 35.47 ± 1.71 kg / m², n = 11) and practically healthy (BMI = 22.9 ± 1.06 kg / m², n = 11). Patients were interviewed using validated questionnaires on quality of life, sleep quality, anxiety and depression, physical activity. Anthropometric measurements such as body mass index (BMI), body shape index WHtR, and conventional clinical laboratory studies were carried out. Statistical analysis was performed using IBM SPSS Statistics, Statistica 12, Excel 2010. Materials were approved by ethical commission.

Results. It was found that the degree of abdominal obesity in patients of the main group was WHtR = 0.94 ± 0.03; and in the comparison group - 0.81 ± 0.03 (p < 0.05), which indicates a high risk of developing non-communicable diseases and metabolic syndrome. The degree of physical activity in both groups was low, but the physical condition of obese patients was significantly worse than in the comparison group, and did not ensure the full performance of daily activities (p < 0.05). The social activity of obese patients was worse than in the comparison group (p < 0.05), which is due to certain complexes or psychoemotional disorders. Thus, obese patients had a higher degree of depression (7.75 ± 1.89, p < 0.05) and anxiety (25.13 ± 5.32, p < 0.05), in contrast to patients without obesity (3.25 ± 1.01 and 8.13 ± 2.75, respectively). Evaluation of daytime sleepiness showed the presence of mild sleepiness in obese patients, poor quality of night sleep in contrast to healthy subjects (p < 0.05), which affected the quality of life in general.

Conclusions. Obese patients had a high degree of abdominal obesity, low physical and social activity, higher degrees of depression and anxiety, daytime sleepiness and lower quality of sleep, which resulted in a lower quality of life.

Keywords: obesity, overweight, quality of life, anxiety, depression, sleep quality, drowsiness

Семіздікке шалдыққан еңбекке қабілетті жастағы адамдардың өмір сапасы, психикалық денсаулығы және ұйқының бұзылуы

В. Ткаченко, Т. Багро

П.Л. Шупик атындағы Украина ұлттық денсаулық сақтау университеті, Киев, Украина

Мақсаты. Семіздіктің таралуы жыл сайын өсіп келеді және көптеген жұқпалы емес аурулардың қауіп факторы болып табылады. Семіздіктің этиологиялық факторлары негізінен алиментарлық фактор және физикалық белсенділік болып табылады, бірақ психикалық денсаулық жағдайы, ұйқының сапасы және пациенттердің өмірі, әсіресе әлемдегі COVID-19 пандемиясында үлкен маңызға ие.



Tkachenko Victoria.
 e-mail: wltk@ukr.net

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Біздің зерттеуіміздің мақсаты негізгі еңбекке қабілетті жастағы семіздікпен ауыратын науқастардың психикалық денсаулығының, ұйқышылдықтың, ұйқының сапасы мен өмір сүру сапасының арасындағы байланысты анықтау болды.

Материалдар мен әдістер. Когортты рандомизацияланған зерттеуге пациенттердің 2 тобы кірді: негізгі-семіздікпен ($BMI=35,47\pm 1,71$ кг/м², $n=11$) және іс жүзінде сау ($BMI=22,9\pm 1,06$ кг/м², $n=11$). Пациенттерге өмір сапасы, ұйқы сапасы, мазасыздық және депрессия, дене белсенділігі бойынша сауалнамалардың валидизованихтары көмегімен сауалнама жүргізілді, антропометриялық өлшеулер - дене салмағының индексі (ДСИ), WHtR дене пішінінің индексі және жалпы қабылданған Клиникалық-зертханалық зерттеулер жүргізілді. Статистикалық талдау IBM SPSS Statistics, Statistica 12, Excel 2010 көмегімен жүргізілді. Материалдарды этикалық комиссия бекітті.

Нәтижелері. Негізгі топтағы пациенттерде іштің семіздік дәрежесі $WHtR=0,94\pm 0,03$ болғаны анықталды; ал салыстыру тобында - $0,81\pm 0,03$ ($p<0,05$), бұл инфекциялық емес аурулардың, метаболикалық синдромның даму қаупінің жоғары екендігін көрсетеді. Екі топтағы физикалық белсенділік деңгейі төмен болды, бірақ семіздікке шалдыққан науқастардың физикалық жағдайы салыстыру тобына қарағанда едәуір нашар болды және күнделікті іс-әрекеттің толық орындалуын қамтамасыз етпеді ($p<0,05$). Семіздікпен ауыратын науқастардың әлеуметтік белсенділігі салыстыру тобына қарағанда нашар болды ($p<0,05$), бұл белгілі бір кешендерге немесе психоэмоционалды бұзылуларға байланысты. Сонымен, семіздікпен ауыратын науқастарда депрессияның ($7,75\pm 1,89$, $p<0,05$) және мазасыздықтың ($25,13\pm 5,32$, $p<0,05$) жоғары дәрежесі болды, семіздіксіз пациенттерге қарағанда (тіісінше $3,25\pm 1,01$ және $8,13\pm 2,75$). Күндізгі ұйқышылдықты бағалау семіздікке шалдыққан науқастарда жұмсақ ұйқышылдықтың болуын, сау адамдарға қарағанда түнгі ұйқының нашар сапасын көрсетті ($p<0,05$), бұл жалпы өмір сапасына әсер етті.

Қорытынды. Семіздікпен ауыратын науқастарда іштің семіздігі жоғары, физикалық және әлеуметтік белсенділігі төмен, депрессия мен мазасыздықтың жоғары деңгейі, күндізгі ұйқының болуы және ұйқының сапасы төмен болды, бұл өмір сапасының төмендеуіне әсер етті.

Негізгі сөздер: семіздік, артық салмақ, өмір сапасы, мазасыздық, депрессия, ұйқы сапасы, ұйқышылдықтық

Качество жизни, психическое здоровье и нарушения сна у людей трудоспособного возраста с ожирением

В. Ткаченко, Т. Багро

Национальный университет здравоохранения Украины имени П.Л. Шупика, Киев, Украина

Распространенность ожирения ежегодно растет и является фактором риска многих неинфекционных заболеваний. Этиологическими факторами ожирения являются в основном алиментарный фактор и гиподинамия, но большое значение имеют состояние психического здоровья, качество сна и жизни пациентов, особенно во время пандемии COVID-19 в мире.

Целью нашего исследования стало определить взаимосвязь нарушений психического здоровья, сонливости, качества сна и качеством жизни пациентов основного трудоспособного возраста с ожирением.

Методы. Когортное рандомизированное исследование включало 2 группы пациентов: основная - с ожирением ($ИМТ=35,47\pm 1,71$ кг/м², $n=11$) и практически здоровые ($ИМТ=22,9\pm 1,06$ кг/м², $n=11$). Пациентам проводился опрос с помощью валидизованных опросников по качеству жизни, качества сна, тревоге и депрессии, физической активности, проводились антропометрические измерения - индекс массы тела (ИМТ), индекс формы тела WHtR и общепринятые клинико-лабораторные исследования. Статистический анализ осуществлялся с помощью IBM SPSS Statistics, Statistica 12, Excel 2010. Материалы утверждены этической комиссией.

Результаты. Установлено, что степень абдоминального ожирения у пациентов основной группы составляла $WHtR=0,94\pm 0,03$; а в группе сравнения - $0,81\pm 0,03$ ($p<0,05$), что свидетельствует о высоком риске развития неинфекционных заболеваний, метаболического синдрома. Степень физической активности в обеих группах была низкой, но физическое состояние пациентов с ожирением было значительно хуже чем в группе сравнения, и не обеспечивало полноценного выполнения повседневной деятельности ($p<0,05$). Социальная активность пациентов с ожирением была хуже, чем в группе сравнения ($p<0,05$),

что обусловлено определенными комплексами или психоэмоциональными расстройствами. Так, пациенты с ожирением имели более высокую степень депрессии ($7,75 \pm 1,89$, $p < 0,05$) и тревоги ($25,13 \pm 5,32$, $p < 0,05$), в отличие от пациентов без ожирения ($3,25 \pm 1,01$ и $8,13 \pm 2,75$ соответственно). Оценка дневной сонливости показала наличие легкой сонливости у пациентов с ожирением, плохое качество ночного сна в отличие от здоровых ($p < 0,05$), что повлияло на качество жизни в целом.

Выводы. Пациенты с ожирением имели высокую степень абдоминального ожирения, низкую физическую и социальную активность, более высокую степень депрессии и беспокойства, наличие дневной сонливости и более низкое качество сна, что сказывалось на более низком качестве жизни..

Ключевые слова: ожирение, избыточный вес, качество жизни, тревога, депрессия, качество сна, сонливость

Introduction

Obesity (WHO definition, 1997) – is a chronic disease, heterogeneous in etiology and clinical manifestations, which progresses naturally and is characterized by excessive deposition of fat in the body. Morbid obesity is the excessive deposition of body fat with a BMI > 40 kg / m² or with a BMI > 35 kg / m² in the presence of serious complications associated with obesity [1-3].

According to the WHO, there are about 1.1 billion overweight adults in the world [4], 30% of whom are obese [5]. In most developed European countries, 15 to 25% of the adult population is obese. Recently, there has been a significant trend towards the growth of this pathology in children and adolescents: 15% - obesity, 25% - overweight. Directly in Ukraine, 18-20 thousand new cases of obesity were registered among children and adolescents [6]. The prevalence of the pathology reaches the scale of a pandemic [7], which led to the need to create the World Obesity Federation (WOF) in 2014 on the basis of the Obesity Association (1967) [8]. In conjunction with the WHO, WOF treats "obesity" as a "chronic recurrent disease" [9].

Overweight in childhood is a predictor of obesity in adulthood: 50% of children who were obese at age 6 are obese in adulthood, and in adolescents this probability has increased to 80% [10, 11]. Epidemiologists predict an increase in the prevalence of obesity among men by 40% and women by 50% by 2025 [12, 13].

Today it is known that patients with severe obesity significantly reduce life expectancy to 15 years, from 3 to 5 years with moderate excess weight. In practice, in two out of three cases, death occurs from diseases associated with impaired lipid metabolism and obesity [14-19]. Obese people visit doctors more often, and the cost of their treatment is much higher than that of patients without this risk factor. Only direct costs exceed 30%, and in the presence of diseases associated with obesity - by 65-113% [20-22].

Quite often people with this nosology encounter stigmatization in society, which as a consequence is manifested by signs of personality disorder: low self-esteem, depression, emotional distress, eating disorders. Especially at a young age, this condition is often regarded as a defect.

Being overweight has a very negative effect on the physical activity of patients, often due to impaired

functioning of the respiratory muscles. Restrictive syndrome, caused by a decrease in static lung volume (total lung volume and functional residual volume), reserve expiratory volume.

It is known that obese patients have psycho-emotional disorders and circadian rhythm disorders which are both risk factors and factors of progression of insomnia, coronary heart disease, oncopathology, metabolic disorders, in particular, such forms of diabetes mellitus as type 2 diabetes mellitus mild obesity-related diabetes (MOD), latent autoimmune diabetes in adults [23]. From these data it is clear that the problem of obesity is global, progressing each year, worsening the prognosis of complications and survival of patients in the population, in addition, is economically costly for countries as a whole, which leads to many unexplored issues.

Purpose: to determine the relationship between mental health disorders, drowsiness, sleep quality and quality of life of patients of primary working age with obesity.

Methods

We examined a group of obese patients (BMI = 35.47 ± 1.71 kg / m², n=11), aged 40.63 ± 2.12 years. As a comparison group the practically healthy patients without obesity of the corresponding age (37.56 ± 2.07 years, BMI = 22.9 ± 1.06 kg / m², n=11) were examined. In terms of gender, in both groups men were 30% and women - 70%. Patients in both groups were asked to participate a survey that included a combination of validated questionnaires: SF-36 quality of life, International Questionnaire on Physical Activity (IPAQ), Epworth Sleepiness Scale (ESS), the Pittsburgh Sleep Quality Index (PSQI), Hamilton scale (anxiety score), Beck depression scale, Hospital anxiety and depression scale (HADS), Dutch Eating Behaviour Questionnaire (DEBQ). The patients underwent anthropometric measurements - body mass index (BMI), body shape index (Waist-to-height ratio -WHtR) and generally accepted clinical and laboratory studies. Statistical analysis was performed using IBM SPSS Statistics, Statistica 12, descriptive statistics Excel 2010.

The materials of the study are approved by the ethical commission of Shupyk National Healthcare University of Ukraine - the study is in compliance with the principles of legality, respect for the rights and freedoms of the individual, independence, objectivity, competence,

integrity, confidentiality, social responsibility, follows the Helsinki Declaration.

Results

The results are presented in Table 1. It was found that the degree of abdominal obesity in patients of the main group was $WHtR = 0.94 \pm 0.03$; and in the comparison group - 0.81 ± 0.03 ($p < 0.05$). The degree of physical activity in both groups was low, but the physical condition of obese patients was significantly worse than in the comparison group, and did not ensure the full performance of daily activities ($p < 0.05$). The social activity of obese patients was worse than in the comparison group ($p < 0.05$). The psychoemotional disorders were found in obese patients – they had a higher degree of depression (7.75 ± 1.89 , $p < 0.05$) and anxiety (25.13 ± 5.32 , $p < 0.05$), in contrast to patients without obesity (3.25 ± 1.01 and 8.13 ± 2.75 , respectively). Evaluation of daytime sleepiness showed the presence of mild sleepiness in obese patients, poor quality of night sleep in contrast to healthy subjects ($p < 0.05$), which affected the quality of life in general. After correlation analysis, it was found that the correlation between sleep quality (PSQI) and drowsiness (Epworth Sleepiness scale) was significant ($r = -0.092830$, $p < 0.05$), the quality of life of patients had a negative correlation with the degree of anxiety and depression ($r = -0.86695$, $r = -0.81827$, $p < 0.05$).

Eating behavior on the type of external ($p = 0.004$, $p < 0.05$) and restrictive ($p = 0.034$, $p < 0.05$) significantly prevailed in the study group in contrast to the control, where more pronounced behavior of the emotional type, which had no significant significance ($p = 0.154$, $p > 0.05$).

Discussion

According to the literature, obesity is a risk factor for many non-communicable diseases and mortality from them, which is directly dependent on the level of BMI [24-31]. Abdominal obesity has a special effect on the severity of metabolic changes and mortality risks [32-36]. In our study, it was determined that the degree of abdominal obesity assessed by WHtR in patients of the main group was 0.94 ± 0.03 ; and in the comparison group - 0.81 ± 0.03 , $p < 0.05$, which indicates a high risk of non-communicable diseases, metabolic syndrome and the probability of reducing life expectancy by 10-11.5%, and is a significant factor influencing the quality life of patients. The severity of abdominal obesity depending on BMI is shown in Fig. 1.

Quality of life of patients – is the individual ratio of personality in society in accordance with the culture and value systems of society with the task (desires) of a particular individual, his plans, capabilities and the degree of general dissatisfaction [37]. Assessment of the quality of life in the study using a non-specific questionnaire SF-36 allowed to assess 2 aspects of patient health - Physical component (physical functioning - PF, role functioning - RP, pain intensity - BP, general health) and Psychological component (vital activity - VT, social functioning - SF, role functioning due to emotional state - RE, mental health - MH) to compare their relationship with mental health and sleep disorders (table 1).

According to the data obtained using the SF-36 questionnaire (table 1), it was found that the physical functioning (PF) of patients in the main group was at a low level as well as patients in the comparison group - without obesity. This indicator of physical functioning is sufficiently correlated with the results of the questionnaire to assess the degree of physical activity (IPAQ, $p > 0.05$), which allows us to conclude that the degree of physical activity in the study groups did not depend on BMI patients and it was shown also in other studies [38-39]. These data confirm the data of the STEPS population study in Ukraine [40] that the rate of physical activity is reduced in the population as a whole, which may explain the lack of differences in the study groups. However, when evaluating Role Physical (RP) in our study, it was confirmed that the physical condition of obese patients is significantly worse than in the comparison group, and does not provide full performance of daily activities ($p < 0.05$). However, the restriction of daily activities was not associated with pain syndromes or any pathological conditions - the rate of pain intensity (Bodily Pain BP) does not differ significantly in the study groups ($p > 0.05$), as well as indicators of general condition health (General Health GH) - $p > 0.05$ and viability (Vitality VT) - $p > 0.05$.

The social activity of obese patients (Social Functioning SF) was significantly different from that of patients in the comparison group ($p < 0.05$), which may be due to certain complexes or psycho-emotional disorders, although according to the SF-36 questionnaire emotional state (Role Emotional RE) and the mental health (MH) of patients in both groups was not good but did not differ significantly ($p > 0.05$), which may be due to the overall impact of the situation in the country during the pandemic and anti-terrorist operation on the psycho-emotional state of both groups of patients.

A more detailed study of the psycho-emotional state of patients using the HADS scale showed a significantly higher degree of depression in obese patients - 7.75 ± 1.89 , while in non-obese patients it was 3.25 ± 1.01 ($p < 0.05$). The level of depression determined by the Beck scale also showed a difference - the main group - 13.63 ± 4.32 , comparison group - 7.63 ± 1.76 , ($p > 0.05$), although the difference was insignificant, which may be due to a small sample. The dependence of BMI on depression is indicative, which is given in the Fishbone Diagram (Cause and Effect Diagram, Isikawa diagram) (Fig. 2).

Assessment of anxiety showed the similar results - in obese patients by the Hamilton scale (HAM-A) degree of anxiety was estimated as symptomatic anxiety and was significantly higher (25.13 ± 5.32 , $p < 0.05$) compared with nonobese patients (8.13 ± 2.75 which was equivalent to possible anxiety disorders). According to the HADS scale the average anxiety score was higher in the obese group (8.63 ± 1.80 - subclinical anxiety), compared with the group without obesity (5.63 ± 1.31 – no anxiety, $p = 0.144218$), but no significant difference was obtained.

Evaluation of daytime sleepiness of patients according to the Epworth Sleepiness Scale showed a significant

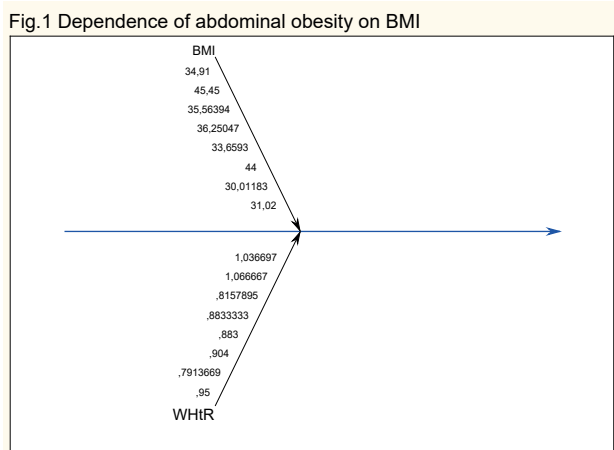


Fig.1 The severity of abdominal obesity depending on BMI

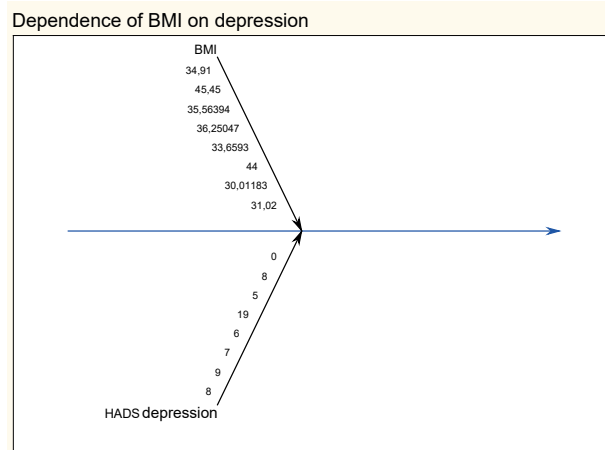


Fig.2 Dependence of BMI on depression

Table. 1. The results of the obtained data according to the questionnaires in the study groups

Scale		Obese patients	Patients without obesity	P (T<=t)
WHtR		0,94± 0,03	0,81± 0,03	0,059686
SF36	PF	81,88 ±6,47	86,25 ±5,32	0,337759
	RP	56,25 ±13,98	87,50 ±9,45	0,047488
	BP	67,25±7,67	75,88±9,69	0,238705
	GH	61,86±7,46	61,38±8,88	0,485806
	VT	49,36±2,74	54,38±6,71	0,261562
	SF	53,13±7,38	81,25±7,09	0,003301
	RE	66,67±16,67	58,31±13,73	0,341931
	MH	54,5±6,23	62,00±5,18	0,197071
IPAQ		28,38±4,19	25,13±3,43	0,331779
Epworth Sleepiness Scale		10,14± 1,99	5,75± 0,98	0,023236
PSQI		8,25±1,03	5,13±1,03	0,061046
Hamilton scale (NAM-A)		25,13±5,32	8,13±2,75	0,019011
Beck scale (depression scale)		13,63±4,32	7,63±1,76	0,149892
HADS	Anxiety	8,63±1,80	5,63±1,31	0,144218
	Depression	7,75±1,89	3,25±1,01	0,049133
Eating behavior	Emotional type	3,01±0,39	2,31±0,33	0,154264
	External type	2,72±0,29	1,70±0,33	0,004165
	Restrictive type	3,68±0,21	3,13±0,18	0,034237

Fig.3 Dependence of daytime sleepiness on BMI.

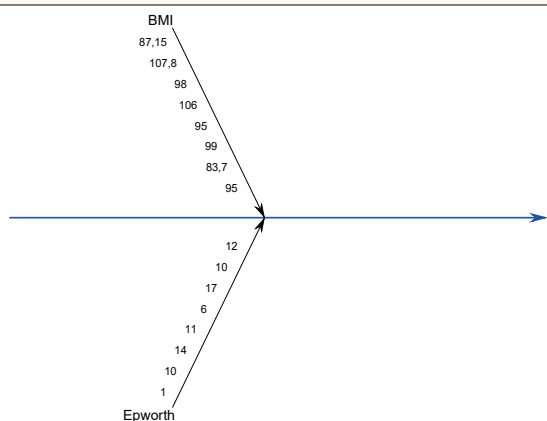


Fig.3 Dependence of daytime sleepiness on BMI.

difference between the groups, indicating the presence of mild drowsiness in obese patients, in contrast to patients with normal weight ($p < 0.05$). The dependence of daytime sleepiness on BMI is shown in Fig. 3. The results of the assessment of sleep quality according to the Pittsburgh questionnaire showed the worse quality in the obese group (8.25 ± 1.03 – more than 5 points is regarded as confirmation of poor sleep quality) than in the normal weight group (5.13 ± 1.03). The correlation between sleep quality (PSQI) and drowsiness (Epworth) was significant ($r = -0.092830$, $p < 0.05$).

After correlation analysis, it was found that the quality of life of patients had a negative correlation ($r = -0,86695$, $r = -0,81827$, $p < 0.05$) with the degree of anxiety and depression.

Conclusions

Patients with obesity had a high degree of abdominal obesity, which indicates a high risk of developing non-

communicable diseases, metabolic syndrome. At the same time, low physical activity was accompanied by poorer physical condition of obese patients, which limited their performance of daily activities. The social activity of obese patients was limited due to certain complexes or psycho-emotional disorders – a higher degree of depression and anxiety, the presence of daytime sleepiness with poorer quality of sleep, and affected a lower quality of life.

Limitations

The study has just started and the article represents the preliminary results on small groups. The hormones and laboratory results as well as the patient-oriented approach for correction of health disorders as innovation will be represented in further publications.

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