## Implementing of Novel Nursing Care Bundle on Chronic Low Back Pain and Functional ability of Obese Patients Undergoing Bariatric Surgery Aya S Atta<sup>1</sup>, `Nagwa R Attia<sup>2</sup>, Hamdy Sidqui Abdalla<sup>3</sup>, Hanan M El-Sadany<sup>4</sup>, Reda A Ibrahim <sup>5</sup>

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# Abstract

**Background:** Obesity is a widespread health concern that is linked to various comorbidities, including chronic low back pain (CLBP). Low back pain is a prevalent musculoskeletal disorder that significantly restricts daily activities. The aim of the present study is to assess the implementation of a novel nursing care bundle in managing chronic low back pain and improving functional ability among obese patients undergoing bariatric surgery. Subjects and method; A quasi-experimental study was carried out at the Surgical Department of Tanta University Educational Hospital. The study included a total of 60 adult patients, who were evenly divided into two groups, each consisting of 30 patients Data collection Tools: Three tools were used for data collection as follow; Tool (1) "Structured Interview Questionnaire" Part (one): Demographic and personal data. Part (two): Clinical data covering History. Tool (II) Pain assessment tool, Tool (III) "Oswestry low back Disability Index (ODI)". Results; The findings of this study illustrated was highly statistical significance difference of reduction of pain where two third(66%) of study group had (mild pain) while minority control group had mild pain .There was statistical significance (6.7%)approximately to more than half (56.7%) of study group had mild functional disability while minority (13.3%) control group had mild functional disability ... Conclusion: Obesity is a major risk factor for chronic low back pain (LBP). Recommendation: assessment of obese patients at the day of admission & at discharge adherence to the nursing Care Bundle for obese patient after discharge for future application of pilates based exercises that it is one element of bundle of care according to patients ability

Keywords: Obesity, LowbackPain, kinesio tape, functional status, Bariatric Surgery

#### Introduction:

Low back pain (LBP) is a common disorder seen in clinical practice and is a serious problem. Nearly 75–85% of people have experienced LBP, which has large economic and social costs. It has a broad range of potential adult populations. etiologies for Etiologies differ depending on the population, patient's but most commonly, it is mechanical or nonspecific. Back pain causes significant rates of disability (Nicol., et al., 2023).

Obesity as classified by the World Health Organization (WHO), is characterized by a Body Mass Index (BMI) exceeding 30 kg/m<sup>2</sup>. This condition affects over 500 million adults globally and poses significant health risks due to excessive body fat accumulation (WHO, 2023). While BMI is not a direct measure of fat mass, it is widely used as an indicator of obesity. The primary cause of obesity is an imbalance between energy intake and expenditure, where calorie consumption surpasses energy utilization, leading to weight gain (Liu, Tang & Li, 2023).

Obesity has a strong link between obesity and chronic low back pain (CLBP). Approximately one-third of global adult population the is classified as overweight based on BMI criteria. Obesity influences spinal health through both biomechanical strain and inflammatory processes. **Studies** indicate that the correlation between obesity and back pain is more pronounced in women than in men. This discrepancy may be attributed to differences in pain perception.

hormonal influences, and variations in body composition, including fat distribution and lean mass proportion. Notably, fat mass has been associated with increased back pain intensity and disability, particularly among female populations (Lucha-López, Hidalgo-García, Monti-Ballano, & Márquez-Gonzalvo, 2023).

Care bundles (CB) have been developed as structured sets of evidence-based nursing interventions. Typically consisting of three to five components, CBs are designed to be implemented collectively to ensure reliable and effective healthcare practices. They are widely utilized across clinical settings to improve patient outcomes by preventing and managing various health conditions.

Multidisciplinary teams collaborate to integrate the best practices and research-based strategies, ultimately optimizing the quality of patient care different health conditions. When used together, significantly improve patient outcomes. Multidisciplinary teams work to deliver the best possible care supported by evidencebased research and practices, with the ultimate outcome of improving patient care (McCarron, 2019).

Several therapeutic approaches exist managing CLBP in obese for individuals. These include both medical physical and therapy interventions. Among the nonpharmacological treatments, Pilates exercises and kinesiology taping have shown potential in enhancing mobility and reducing discomfort. Additionally, chiropractic spinal manipulation is often recommended to support musculoskeletal alignment

and facilitate the return to normal physical activity. Spinal manipulation is known as a "hands-on" treatment of the spine, which includes both manipulation and mobilisation. In manual mobilisations, the patient's moves spine within their range of motion. They use slow, passive movements, starting with a small range and gradually increasing to a larger range of motion. Manipulation is a passive technique where the nurse applies a specifically directed manual impulse, or thrust, to back, at or near end passive the of the (or physiological) range of motion. This is often accompanied by an audible 'crack' (Zoete et al., 2021).

Pilates incorporates a structured series of exercises that emphasize progressive movements of the body. This dynamic method focuses on enhancing strength, flexibility, and stretching while maintaining the body's natural physiological curves. The abdomen acts as the core strength continuously center. engaging throughout all Pilates exercises. The technique merges exercise principles from Eastern traditions-such as mind-controlled motion, precision, energy-focused body centers, proper breathing, and relaxation techniques like yoga-with Western fitness approaches that emphasize endurance and stabilization. By targeting deep postural muscles and reinforcing the core's surrounding structures, Pilates helps protect the back from injuries, pain, and discomfort proper breathing Yoga) and relaxation, and the Western cultures (endurance training, stabilization). Pilates exercises are designed to strengthen the inner postural muscles and build corset muscles around the trunk that protect the back from possible injury, aches, and pain (**Oliveira et al., 2019**).

Regarding Kinesio taping. this technique supports the body's natural providing process healing by muscular and joint stability without restricting movement. It has been effectively used in managing medical, orthopedic. and neurological conditions. Kinesio tape is а lightweight, elastic, and breathable cotton-based fabric with an acrylic adhesive. This adhesive is latex-free, heat-activated, and non-medicated, ensuring comfort while allowing moisture evaporation for quicker drying. As a result, Kinesio tape can remain in place for up to three to four days (Oliveira et al., 2023).

The role of nurses play a critical role in patient care by educating individuals on alternative therapeutic methods, proper self-care practices, and evidence-based research. Beyond providing psychological and physical support, nurses encourage patient autonomy. When addressing low back pain in obese patients, nursing interventions primarily focus on including physical care. pain assessment and monitoring related factors (Gaowgzeh, et al., 2019).

# Significance of the study:

Chronic low back pain (LBP) is a prevalent global health issue and a leading cause of disability, significantly contributing to healthcare costs. Its impact extends beyond physical limitations to economic burdens, including work absenteeism and reduced productivity.to pathophysiological

metabolic disorders and may exacerbate existing medical conditions. Similarly, it is a social and Obesity is also linked to various metabolic and physiological disorders that can exacerbate existing medical conditions, including chronic LBP. Implementing comprehensive care strategies, such as Kinesio taping and Pilates exercises, has been shown to help reduce pain and enhance functional ability in affected individuals (Davis, Lee, & Johnson, 2023).

#### Aim of the study

The study aimed to evaluate the implementation of a novel nursing care bundle in managing chronic low back pain and enhancing functional ability among obese patients undergoing bariatric surgery.

# **Research hypothesis**

Study group who receive novel nursing care bundle exhibited reduction of low back pain and improving functional ability rather than control group who will receive routine care.

#### **Research design**

The study used a quasi- experimental research design.

#### Setting

The study was conducted at the surgical department of Tanta University Educational Hospital.

#### Subjects

The sample of this study consisted of 60 patients and divided into two equal groups. Each group consisted of 30 patients.

**The Study group:** consisted of thirty adult patients received Bundle of care.

The control group: consisted of

thirty adult patients received routine hospital care.

- Both groups were under prescribed hospital treatment.
- The sample size was determined based on the following criteria :
- Number of patients admitted to Tanta educational hospital through in (2023) exceed 300 cases.
- Confidence level of 95%, error with 5% type 1 error rate  $\alpha$ = .05 was considered and power of test of confidence on Epi info. Soft ware program.
- Equation for determining patient sample size at 95% confident power of the study Steven Thompson equation

$$\mathbf{n} = \mathbf{N} \mathbf{x} \mathbf{P} (1-\mathbf{P})$$

$$(N-1 x (d2 / z^2) + P (1-P))$$

- N = Total population size
- D = Error percentage (0.05)
- Z= Corresponding standard score for 95% significance level (1.69) P = Percentage of objectivity availability (0.1)- Subjects were selected according to the following criteria
- Conscious and able to communicate verbally.
- Adult patients (21- 60years).
- Both sexes.
- Never used KT (kinesio tape).
- Obesity grade, II, III..
- Has localized low back pain lasted for more than 12 week.

### **Exclusion criteria**

- Open wound.
- Has allergy to Acrylic.
- Pregnancy, Post partum, sciatica.
- Lower extremities injuries.

- Spinal surgery.
- Nerve root compression.
- Rheumatic diseases.
- Infective condition of the skin.

**Tools of data collection:** 

Three tools were used to conduct this study.

Tool (1) Structured Interview Questionnaire:

This tool was developed by researchers.

The literature review consists of two main parts:

- Part (one): Bio Sociodemographic data: such as patient's code, name, age, sex, marital status, educational level, and occupation, Residence Body mass index (BMI).
- **Part (two):** Patients'clinical data: which includes; present medical history, past medical history, , past surgical history ,family history.

Tool (II): Pain assessment tool:

The Indiana Polyclinic Combined Pain Scale (IPCPS) was first developed in (2001) and updated by Dimitry Arbuck (2016). in It consisted of eleven Statements that indicated to patient responses to pain severity. It was adobted by researcher and it translated into Arabic to evaluate the intensity of pain. Arbuck, D., & Fleming, A. (2016).

Scoring system: discomfort levels from no pain to the most severe form. A score of (0) indicates no pain, (1) represents minimal discomfort with a barely noticeable sensation. Mild pain ranges from (2 to 3), where pain is present but does not significantly interfere with daily activities. Moderate pain, scored between (4 and 5), is more pronounced and may affect movement and concentration. Severe pain, ranging from (6 to 7) becomes intense and limits physical activity, often requiring medical intervention. A score of (8) signifies debilitating pain, making daily tasks extremely difficult. Excruciating pain, rated 9, is overwhelming and significantly disrupts normal functioning. The highest level, 10, represents the worst imaginable pain, causing complete inability to perform any activity. This classification system ensures а standardized approach pain to facilitating effective assessment. management and treatment strategy

# **Total scoring**

- No pain equal to 0
- Mild pain equal to 1-3
- Moderate pain equal to 4-6
- Severe pain equal to 7-9
- Worst pain equal to 10

Tool (III) "Oswestry low back Disability Index (ODI) ": It was first and developed was used bv Fairbank, & Pynsent, (2000). It was translated into Arabic and adopted by researcher to measure a patient functional disability outcomes. It was gold standard for assessing low back pain and include ten categories such as ability to care for oneself, ability to walk, ability to sit, ability to stand, social life and sleep quality. Pain intensity, travelling, life. sex employment, lifting.

**Scoring system:** Each topic category was be scored on a scale of (0-5) with the first statement being zero and indicating the least amount of disability and the last statement is scored 5 indicating most severe disability. The scores for all questions answered were summed, then divided on 50 multiply in 100 to obtain the total score Zero is equated with no disability and 50 is the maximum disability possible.

- No disability: 0 –4.
- Mild disability: 5-14.
- Moderate disability: 15 –24.
- Severe disability: 25–34.
- Completely disabled: 35 50.

# Methods of data collection:

- 1. An official permission to carry out the study was obtained from the responsible authorities of faculty of Nursing, Tanta University and the head of the Tanta Physical Medicine and Rehabilitation department.
- 2. Ethical Consideration
- Written Informed consent was obtained from the patients to participate in the study after explaining the purpose of the study.
- The approval of the ethical committee was obtained.
- Confidentiality and privacy were assured.
- The patient had the right to refuse participation or withdrawn from the study at any time.
- Nature of the study caused no harm or pain for patients.
- The researcher was certified to kinesio tape and spinal manipulation application to conduct this study.
- **3.** The tools of the study were developed after review of related literature.
- **4.** This study was conducted in 6 month duration.
- 5. Apilot study was carried out on 10% of total patients to test the feasibility and applicability of the

developed tools, accordingly, needed modification was be done. They was excluded from the original sample.

- 6. The study tools tested for Reliability and validity by jury of (5) experts in the area of Medical Surgical Nursing and physical therapist to check content validity and clarity of questionnaire.
- 7. Tools (I and II and III) were be researchers used by before beginning of Bariatric sugery and tool I part I The study utilized three tools (I, II, and III) applied at different stages. Before the bariatric surgery, all three tools were used, with Tool I (Part I) exclusively applied before the intervention. Tools II and III were administered twice-before and after surgery—for all study group.
- 8. The present study was conducted through four phases (Assessment, planning, implementation and evaluation
- 9. Reliability of the tool:

The research was conducted in four distinct phases: assessment, planning, implementation, and evaluation. To ensure the reliability of the study tools, Cronbach's alpha test was applied, yielding coefficients of 0.874 for Tool I, 0.902 for Tool II, and 0.891 for Tool III.

# Phases of the actual study:

### 1. Assessment phase:

- Immediately upon admission both study and control groups and was assessed using tool I & tool II & tool III.

# 2. Planning phase:

- Based on data of assessment phase and literature review, nursing care bundle was developed, patient's goal, priorities and expected outcomes.
- Desigening the novel bundle of nursing care
- Preparation of patients and preparation of material ( kinesio tape )
- The study group received two sessions; session immediate and session after surgery.
- Each session continued 30- 45 minutes except first session lasted for 60 minutes.
- The researcher performed bundle in day for two patients in day. On both day Tuesday, Wednesday this day operation for bariatric.

# 3. Implementation phase:

- The Study group was encouraged to receive Care bundle that consist of Spinal manipulation therapy especially central postero anterior mobilization technique , Pilates based exercises , and moist warm compress, Kinesology tape for low back pain.
- Data were collected over a period of 6 months, started from January 2024 to first of June 2024. The researcher used to start the interview by introducing herself before providing an explanation for the purpose and the nature of the study. The researcher started with control group first then the study group to prevent data contamination. Each patient was individually interviewed in Surgical Department to fulfill the sheet questions. Each interview for

Patient lasted for about 20-30 minutes to complete the tools and application practice and received 30-45minute practice of each consist session of spinal manipulation in first session then application of pilates based exercises then moist warm compress then apply kinesio tape.

- The novel nursing care bundle of care for low back pain includes a set of three to five evidencepractice informed nursing performed collectively and reliably to improve the quality of care.It includes spinal manipulation then in first application of pilates based exercises then moist warm compress technique then apply kinesio tape. It will performed to improve reduce pain and functional status through imrove strength muscle and stimulate nociceptor for reduction of pain
- The study group received 3 sessions. Each session consists of spinal manipulation in first session then application of pilates based exercises then moist warm compress then apply kinesio tape last for 3- 4 days.

# a. Steps of spinal manipulations:

- It is a mobilisation technique that produces movement of a mobile vertebral segment without the active participation of muscles related to the movement.
- Posteroanterior (PA) mobilisations of the lumbar spine are achieved by applying a force on to a vertebral segment in a posteroanterior direction (Back to front).

## The steps of spinal manipulation Starting Position

- Patient lying in prone position.
- Researcher stands to side of patient placing their pisiform/ulnar surface of hand over the selected spinous process (SP) with their wrist in full extention. The other hand placed on top of hand to reinforce.
- The researcher's shoulders should be directly above the SP with elbows slightly flexed

# Routine care for control group:

- Proper Sitting Posture: Use a supportive chair with flat feet on the floor.
- Avoid Prolonged Forward Bending: Take breaks every 30-45 minutes if sitting for long periods.
- Use a Lumbar Support Pillow: Helps maintain spinal alignment during prolonged sitting.
- Massage or Foam Rolling: Helps improve circulation and reduce muscle tension.
- Over-the-Counter Pain Relievers: Such as ibuprofen or acetaminophen if necessary.
- 4. Evaluation phase: evaluation was done for both groups (control and study) was assessed four times, First time (upon admission) bundle, second time pre operative, immediate operation using tools, II, III and both groups assessed after third time by using tools tool II, tool III, and fourth time at discharge.

## Results

## Table (1) Distribution of the studied patients of all groups according to their bio socio demographic

The table indicated (1) that proportion considerable (66.7%, 46.7%) of study and control group patients respectively were aged (40-50) years. Also the table revealed that approximately (46.7%, 53.3%) of study and control group patient were male and females respectively. Also, it was found that more than two thirds (70.0%) and and more than one third (36.7%) of the study

and control group were married.

Additionally, the table revealed that more than one third (43%) of the study group patients were secondary educated and one third (30%) of study group patients were primary educated, while more than half from control group was (60%) was primary educated. Moreover, it was found that approximately (30%) and (60.0%) of the study and control groups were house wife respectively. Regarding mid arm circumference for study and control group range from (26-36), (27-35) respectively and waist arm circumference of both studv and control groups respectively range from (81-105), (88-103) respectively.

Additionally, the table revealed that majority of the study group patients had waist circumference range from (81- 112) and (88- 110) cm respectively. And mid arm circumference range from (31- 39) cm of study group and (31-38) of control group respectively.

Furthermore, it was found that there

was statistical analysis indicated no significant differences between the study and control groups concerning all items of bio socio-demographic variables of the patients.

**Table (2)** - Severity of pain of studied and control groups according to The Indiana Polyclinic Combined Pain Scale.

This table (2) & figure (1): showed that at the time of admission, the severity of pain was assessed, revealing that (slightly less than two (60%) study third of group experienced severe pain compared with control group about less than three quarter (73.3%) had severe pain and slightly less than one third (26.7%), (16%) of study and control group respectively had moderate pain.

It was noticed that the following Immediate operative of bundle of care about approximately less than one half (43%) of study group had mild pain pain while less than one quarter (20%) of control study had mild pain and about slightly more than one third (36%) of study group while one quarter of control group (26.7%) had moderate pain. it was found statistical significance difference of reduction of pain where  $(p=0.022^*)$ .

It was found at discharge substantial reduction in pain levels was recorded of bundle of care. There was highly statistical significance difference of reduction of pain where ( $p = 0.001^*$ ) about approximately to two third (66%) of study group 4 reported

(mild pain) while minority (6.7%) control group had mild pain.

# Table (3) & figure (1): Functionalability by using Oswestry low backDisability Index:

**Upon admission**, about more than half (53%) of study group, nearly three quarters (76%) of control group had severe functional disability respectively and slightly one third (30%) of study group and less than one quarter of control group had moderate pain and minority of control and study group had mild functional disability.

It was found preoperative of bundle care. A Statistically significant difference among all both groups where P=0.001\*. There was statistical improvement in functional ability for study group. About one third (30%) had mild functional disability and minority (6.7%) of control group had mild functional disability.

In addition, more than half (56.7%) of study group had moderate pain and slightly less than one quarter (23.3%) had moderate pain and about two third (66.7%) of control group had severe pain and minority of study group had severe pain (6.7%).

It was found at discharge of bundle of care. There was highly statistical significance difference of improvement of functional ability 0.001\*)where (p = about approximately to more than half (56.7%) of study group had mild functional disability while minority (13.3%) control group had mild functional disability.

Table (1): Distribution of the studied obese patients suffering from low back pain undergoing bariatric surgery of both groups according to their bio socio demographic characteristics. (n=60)

BioSocio-demographic			Study		Control		$\chi^2$		
Characteristics			(n=30)		(n=30)		p. value		
Age	< 40	Ν		8		16		5 725	
	~ 40	%	26	5.7%	•	53.3%			
	40 – 50	Ν		20		14			
		%	66	5.7%	•	4	6.7%	, D	0.057
	> 50	Ν		2			0		
	- 30	%	6	.7%			0.0%		
Sex	Male	Ν		14		14			
		%	46	<b>5.7%</b>	•	46.7%		0.00	
	Female	Ν		16		16		1.0	
		%	53.3% 53.3%		, D				
Woight	Range		89	—	142	85	_	140	t:1.343
weight	Mean ± SD		116.53	±	17.15	111.0	±	14.32	0.185
Unight	Range		1.54	_	1.99	1.55	_	1.89	t:0.188
rieight	Mean ± SD		1.73	±	0.13	1.72	±	0.09	0.852
	Range		33	—	44	34	_	46	t:4.432
	Mean ± SD		38.70	±	3.33	37.3	±	2.77	0.052
	Class I (30-35)	Ν		7		1			
PMI		%	23.3%		3.3%		:4.432 0.052		
DIVII	Obese II (35-40)	Ν	21		26				
		%	70.0%		68.8%				
	Obese III (> 40)	Ν		2			3		
		%	6.7%		10.0%				
	Single	Ν	4			11			
		%	13.3%		36.7%				
	Married	Ν		21		11			
Manital status		%	70.0%		36.7%		7.677 0.053		
	Widow	Ν	3		3				
		%	10.0%		10.0%				
	Divorced	Ν	2		5				
		%	6.7%		16.7%				
Occupation	Employee	Ν	11		4				
		%	36.7%		13.3%				
	Enco world	Ν	3			16		ļ	
	Free work	%	10.0%		53.3%		7.669 0.104		
	Housewife	Ν	12		8				
		%	40.0%		26.7%				
	Worker	Ν	3		1				
		%	10.0%		3.3%				
	No work	Ν	1		1				
		%	3	.3%		3.3%			
Educational level	Drimowy sahool	Ν	9		18		0.823 0.664		
	i rimary school	%	30.0%		60.0%				
	University	Ν	8		8				

		%	26.7%		26.7%					
	Secondary	Ν		13			4			
	school	%	4.	3.3%	)	1	13.3%	<b>0</b>		
Midaum	Range		31	_	39	30	_	38	1 212	
circumference	Mean ± SD		35.77	±	2.56	24.90	±	2.58	1.312	
		%	6	6.7%		13.3%		0.195		
Waist	Range		81		112	88	_	110	1.033	
circumference	Mean ± SD		94.93	±	8.52	96.90	±	6.01	0.306	

Table (2): Distribution of the study and control obese patients undergoing bariatric surgery according to level of chronic low back pain using The Indiana Polyclinic Combined Pain Scale. (n=60)

Pain			Study	Control	χ² p. value	
Upon admission	Mild	Ν	4	3		
		%	13.3%	10.0%		
	Moderate	Ν	8	5	1.235	
		%	26.7%	16.7%	0.539	
	Severe	Ν	18	22		
		%	60.0%	73.3%		
	Mild	Ν	4	3		
Pre		%	13.3%	10.0%		
operative	Moderate	Ν	8	5	1.235	
of bundle care		%	26.7%	16.7%	0.539	
	Severe	Ν	18	22		
		%	60.0%	73.3%		
	Mild	Ν	13	6		
Immediate		%	43.3%	20.0%		
operative	Moderate	Ν	11	8	7.598	
of bundle		%	36.7%	26.7%	0.022*	
of care	Severe	Ν	6	16		
		%	20.0%	53.3%		
At discharge after bundle of care	Mild	Ν	20	2		
		%	66.7%	6.7%		
	Moderate	Ν	9	21	24.027	
		%	30.0%	70.0%	0.001*	
	Severe	Ν	1	7		
		%	3.3%	23.3%		

Table (3) Distribution of the studied chronic low back pain patients of both groups undergoing Bariatric surgery according to functional ability by using Oswestry low back Disability Index.

Owestry disability index			Study Control		χ2
					p. value
Upon admission	Mild	N	2	2	
		%	6.7%	6.7%	_
	Moderate	N	9	3	
		%	30.0%	10.0%	4.456
	Severe	N	16	23	0.216
		%	53.3%	76.7%	
	Complete	N	3	2	
		%	10.0%	6.7%	
	Mild	N	3	3	
	Ivilla	%	10.0%	10.0%	
	Moderate	N	9	3	
Pre operative of		%	30.0%	10.0%	3.947
bundle care	Severe	N	16	22	0.267
		%	53.3%	73.3%	
	Complete	N	2	2	
		%	6.7%	6.7%	
	Mild	Ν	9	2	
		%	30.0%	6.7%	
Immediate	Moderate	Ν	17	7	
Immediate		%	56.7%	23.3%	23.682
operative of	Severe	Ν	2	20	0.001*
bundle of care		%	6.7%	66.7%	
	Complete	Ν	2	1	
		%	6.7%	3.3%	
At discharge after bundle of care	Mild	Ν	17	4	
		%	56.7%	13.3%	
	Moderate	N	9	6	
		%	30.0%	20.0%	19.314 - 0.001*
	Severe	Ν	3	15	
		%	10.0%	50.0%	
	Complete	Ν	1	5	



Figure (1): Percent distribution of both group obese patients undergoing bariatric surgery according to The Indiana Polyclinic Combined Pain Scale. (n=60)



Figure (2): Percent distribution of Both group Chronic Low Back Pain of studied and control groups of obese patients undergoing bariatric surgery according to measured by Owestry disability index (n=60)

#### Discussion

Chronic low back pain (CLBP) is a prevalent condition that significantly affects the quality of life, particularly in obese patients who are preparing for bariatric surgery. The interplay between obesity and chronic pain is complex, often exacerbating functional limitations and psychological distress (Davis, Lee, & Johnson, 2023). Recent studies have that effective demonstrated management of CLBP in this

population requires a multifaceted approach, integrating both physical and psychosocial support (Johnson, Smith & Lee, 2023). Nursing care bundles have emerged as a promising strategy to enhance patient outcomes by providing structured interventions tailored to individual needs. These bundles often include components such as pain management, mobility enhancement, and psychosocial support, which have been shown to alleviate pain and improve functional ability (Lee, Kim& Yang, , 2020). The implementation of these bundles in clinical practice is crucial for optimizing recovery and enhancing the overall well-being of obese patients undergoing bariatric surgery (Harris & Dwyer, 2023).

Regarding bio socio demographic data, the finding of current study revealed that more than half of study group were aged between 40 and 50 vears. This might due to the prevalence of chronic conditions among middle-aged adults, which is previous consistent with studv indicating that individuals in this age health risks due to sedentary lifestyles metabolic changes, and age-related degenerative conditions (Smith, Johnson & Lee, 2023). Studies have also suggested that chronic low back pain (CLBP) is particularly common demographic, this often in exacerbated by occupational strain obesity-related and factors (Anderson et al., 2021; Smith, Johnson & Lee, 2023). Moreover, the gender distribution indicated that approximately to half of the study group were male, while more than half were female. This distribution may influence health outcomes, as studies have shown that gender differences can affect the prevalence and management of chronic pain. This study is consistent with study shown that women are more likely to experience and report chronic pain due to hormonal influences, pain perception differences. and healthcare-seeking behaviors (Williams & Clark, 2023). Additionally, men may be less likely to seek timely medical intervention, potentially delaying effective pain management strategies (Johnson et al., 2021). Regarding to marital status The higher percentage of married individuals in both groups (approximately three quarters in the study group and more than one third in the control group) may also play a role in support systems that could recoverv impact and health management that aligned with study was done (Miller, Thompson & Kim 2021).

Marital significantly status can influence health outcomes, as spousal support plays a vital role in pain management, adherence to treatment, and psychological well-being (Miller et al., (2021). Research suggests that married individuals often experience better postoperative recovery due to increased emotional and physical support, which can positively impact ability and long-term functional outcomes that consistent with study was done by Thompson, & Green, (2022). Education levels varied, with over one-third of the study group having secondary education, while the control group showed that more than half had primary education. This

disparity in educational attainment may influence health literacy and access to healthcare resources and lowering educational background are more vulnerable to chronic health conditions due to life style factors which are critical in managing chronic conditions effectively (Lee, , Kim, & Yang, 2020). In terms of lifestyle, it was found that approximately one third of the study group were housewives compared to two third in the control group. This demographic aspect could influence physical activity levels and stress management, both of which are important for overall health (Patel et al., 2023).

Furthermore, there were no statistically significant differences between the study and control groups regarding all items of bio-sociodemographic data, indicating that the groups were comparable in terms of these characteristics. This comparability is crucial for the validity of the study Jalainen, (2017). Regarding the findings of the current studv indicated that majority of participants across all groups were studied classified under obesity grade II, The results concerning Body Mass Index (BMI) are particularly noteworthy, and as both study and control groups were predominantly classified. This aligns with the World Health Organization's (WHO) categorization, where a BMI of thirty five -thirty nine and 9.9 falls into obesity grade II, indicating a high health risk associated with multiple comorbidities (WHO, 2023). Patients in this BMI range are at increased risk of postoperative complications and require more rigorous follow-up and specialized care to optimize surgical outcomes and reduce risks associated with bariatric surgery (Kamran, & Memon, 2020).

Moreover, obesity grade II is often linked with a higher likelihood of cardiovascular issues, and chronic musculoskeletal conditions, which could impact patients' overall recovery and response to the care bundle. This further justifies the focus on implementing recent nursing care bundles to address the complex needs this patient population, of as individuals with higher BMI values tend to show a slower response to postoperative recovery efforts (Ahmed, Khan, & Hussein, 2021). Regarding waist circumference the current study findings on waist circumference (WC) further reinforce the importance of assessing central obesity. The waist circumference range of 81–105 cm in the study group and 88–103 cm in the control group is clinically relevant. WC as is considered that might due to stronger predictor of obesitvrelated health risks than BMI alone provides crucial insights into the health risk profiles of patients undergoing bariatric surgery. While BMI is a key indicator of obesity severity, waist circumference serves an independent predictor as of metabolic and surgical risks. These findings emphasize the need for integrated, patient-centered nursing care bundles that address both overall and central obesity to improve surgical outcomes. enhance postoperative recovery, and reduce obesity-related complications. This due to Excess abdominal fat is associated with an increased risk of metabolic disorders (Huxley, Mendis, Zheleznyakov, Reddy, & Chan, 2022), including type 2 diabetes, hypertension, and cardiovascular disease, making WC a critical measure in bariatric surgery candidates (Ross, 2021).

**Regaring to Type of Operation** Techniques among studied patients, the current study indicated that all patients in both the study and control groups underwent closed surgery via laparoscopy, with none receiving open surgery. This finding reflects the bariatric current trend in and minimally invasive procedures, where laparoscopic techniques are favored due to their associated benefits, such as reduced recovery time, minimized postoperative pain, and lower risk of complications. This finding in agreement with Hussain, Mahmood, & El-Hasani, (2022). The universal adoption of laparoscopy in this study is consistent with modern surgical practices, highlighting advancements in surgical technology and training make minimally invasive that procedures more accessible and consistent with finding of Jones & Patel, (2023).

Regarding the type of bariatric surgery performed, the majority in groups underwent both sleeve gastrectomy Sleeve gastrectomy is recognized as one of the most popular surgeries due bariatric to its effectiveness in significant weight reduction and fewer long-term complications compared to more complex procedures. The preference for sleeve gastrectomy aligns with study was done .that it is often chosen for patients with severe obesity due to its favorable safety profile and successful outcomes in terms of weight loss and comorbidity resolution (**Smith et al., 2023**).

In contrast, with study mentioned approximately one-third of patients in control the and study group underwent Roux-en-Y gastric bypass, which. although less commonly performed than sleeve gastrectomy, remains a standard option for patients requiring more extensive weight loss or those with specific comorbid conditions such as severe gastro esophageal reflux disease (GERD) (Nguyen, & Lee, 2022). The presence of patients opting for gastric bypass in this study highlights the approach taken by surgeon of digestive system based on individual patient needs and health profiles. The current study with study consistent done bv Williams, & Roberts, (2022) that mentioned that surgical techniques in the management of obesity. The choice of specific procedures like sleeve gastrectomy and Roux-en-Y gastric bypass reflects a balance between safety, patient suitability, and expected outcomes, supporting a personalized approach in bariatric surgery. Severity of pain among studied and control groups. Regarding to severity of pain, the current study revealed significant differences in pain severity between the study and control groups as measured by The Indiana Polyclinic Combined Pain Scale. Upon admission, slightly two third of the study group reported severe pain compared to slightly three quarter in

the control group, with a smaller percentage in both groups experiencing moderate pain. These findings align with research **Anderson et al. (2022),** which found that comprehensive care protocols can reduce the initial severity of pain in patients undergoing major surgical procedures.

Regarding to functional ability the studv indicate significant a improvement in functional ability among patients who rec eived the care bundle compared to the control group. Data showed that approximately one third of the study group achieved mild functional disability after the intervention. which aligns with research supporting the importance of bundle of care in improving outcomes for patients with chronic low back pain (Garcia, & Lopez, 2023) and consistent with study was done Khan, , Ahmed & Malik, (2021), Who mentioned that implementing a care bundle can positively impact patients' functional ability. reinforcing highlights research that the importance of psychological and social support in enhancing patient outcomes. It is crucial to integrate bundle into such care clinical protocols, as they may lead to improved quality of life and reduced health burdens. In contrast, other study was done by Smith et al.

(2023), minority of study group was experiencing mild pain due to non adherence of bundle care.

**Finally,** the current study found, that obese patients that suffering from low back pain undergoing bariatric surgery experienced improvement of functional ability and able to perform daily activity and control weight. This support first research hypothesis. As well obese patient reduction of level of pain.

# Conclusion:

Based on the findings of this study, it can be concluded that low back pain is a prevalent condition in clinical practice and poses a significant concern due to its wide range of potential causes in adult populations. It leads to increased healthcare utilization and imposes a substantial economic burden on society. Obesity is a major risk factor for low back pain (LBP), as excessive body weight exerts additional stress on the spine musculoskeletal system, and region, the particularly lumbar contributing to chronic pain development. The implementation of nursing care interventions proved effective in alleviating low back pain among obese patients. Additionally, there was a statistically significant improvement in the functional status of the study group compared to the control group throughout the intervention period.

# **Recommendations:**

- Assessment of obese patients at the day of admission and day of discharge.
- Application of pilates based exercises according to patient ability after patient hemodynamic stability.
- Nursing care bundle should be used as core management for obese patients undergoing bariatric surgery.
- Adherence and maintenance of care bundle after discharge to the Nursing Care Bundle: Obese

patients undergoing bariatric surgery with chronic low back pain (CLBP) should follow the novel nursing care bundle to reduce pain and improve functional ability.

- Active Participation in Care: Patients should actively participate in their care plan, combining physical therapy with lifestyle modifications such as weight loss and stress reduction to maximize outcomes.
- Emotional dimensions of pain, ensuring holistic care.
- Ensuring that care targets activities of daily living and postoperative mobility.
- Interdisciplinary Collaboration: Collaboration with physical therapists, dietitians, and psychologists is essential to provide holistic care for this patient group.
- Education and Support: Nurses should provide ongoing education to patients regarding the benefits of bariatric surgery, the importance of weight management, and strategies to prevent CLBP recurrence.

# For Future Research:

- Application of pilates based exercises that is one elements of bundle care according to patient.
- Integration of artificial intelligence in Care Plans: Investigate the use of artificial intelligence in personalizing care bundles, monitoring patient progress, and predicting outcomes for obese patients with CLBP.
- Educational initiatives for Teaching Nurses application of

kinesiotape and pilates based exercises, spinal manipulation.

Application on large samples:

- Orientation program and continuous service educational program should be held for newly appointed staff nurses working in this field and patients.
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