The Effect of Implementing Benson's Relaxation Technique on the Severity of Anorexia and Quality of Sleep among Cancer Patients Undergoing Chemotherapy

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Abstract

Background: *Cancer patients undergoing chemotherapy experience numerous adverse effects from both the disease and treatment modalities. Anorexia and sleep disturbances represent the most prevalent symptoms that are linked to decreased quality of life and overall survival. Benson's Relaxation Technique is an effective complementary and non-pharmacological intervention that ameliorates symptom severity and improves patient outcomes.* ***Aim of the study***: *The study aimed to evaluate the effect of implementing Benson's Relaxation Technique on the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy.* ***Design***: *A quasi-experimental research design was utilized.* ***Setting***: *The study was conducted in medical and surgical departments at the National Cancer Institute, Egypt.* ***Sample***: *A purposive sample of 86 adult cancer patients undergoing chemotherapy was recruited.* ***Tools***: *Four tools were used for data collection: Tool 1: A structured interviewing questionnaire consisting of two parts: Part (I) patients' demographic data and Part (II) patients' health history; Tool 2: Benson's Relaxation Technique Observational Checklist; Tool 3: Anorexia scale consisting of two parts: Part (I) Visual Analogue Appetite Scale and Part (II) Functional Assessment of Anorexia/Cachexia Therapy-Anorexia/Cachexia Subscale; Tool 4: St. Mary's Hospital Sleep Questionnaire.* ***Results***: *The study demonstrated highly significant statistical improvement in anorexia severity and sleep quality in the study group ($p < 0.001$) at one month, while there was no statistically significant difference in the control group ($P > 0.05$).* ***Conclusion***: *Benson's Relaxation Technique had a positive effect on the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy.* ***Recommendations***: *Hospitals are recommended to incorporate the Benson's Relaxation Technique alongside conventional treatments to alleviate anorexia and sleep disturbances in cancer patients undergoing chemotherapy.*

Keywords: *Anorexia, Benson's Relaxation Technique, Cancer patients, Chemotherapy, Sleep quality*

Introduction:

According to **Siegel et al. (2024)**, cancer represents a complex disease group characterized by uncontrolled growth and dissemination of abnormal cells. These malignant cells invade and destroy normal tissues, potentially metastasizing to distant sites via bloodstream or lymphatic circulation. The disease encompasses over 100 distinct types, each presenting unique characteristics, therapeutic approaches, and clinical outcomes. Cancer constitutes a leading cause of global morbidity and mortality, affecting diverse populations across age groups, ethnicities, and geographical regions.

Lessa et al. (2025) represent chemotherapy as one of the cornerstone treatments in cancer management, employing cytotoxic agents to destroy malignant cells systemically. These therapeutic compounds operate through multiple mechanisms including DNA damage, cell cycle arrest, and apoptosis induction. Chemotherapy may be administered as neoadjuvant therapy to reduce tumor burden preoperatively, adjuvant therapy to eliminate residual cancer cells post-treatment, or palliatively to manage symptoms in advanced disease. Treatment protocols range from single-agent regimens to complex multi-drug combinations delivered

over multiple cycles.

Contemporary clinical observations by **Doshita et al. (2025)** reveal that cancer-related anorexia represents a prevalent and distressing chemotherapy side effect, characterized by significant appetite loss, reduced food intake, and weight loss that severely impacts patient outcomes and quality of life, affecting up to 80% of advanced cancer patients. Similarly, **Nissen et al. (2024)** indicate that sleep disturbances constitute another critical concern with higher prevalence rates than the general population, encompassing insomnia, sleep fragmentation, excessive daytime sleepiness, and altered sleep-wake cycles. Both conditions involve multifactorial etiologies including inflammatory mediators, treatment side effects, pain, anxiety, and depression, creating complex symptom clusters that exacerbate fatigue, cognitive impairment, and immune dysfunction, requiring comprehensive management approach.

According to **Harorani et al. (2020)**, the Benson Relaxation Technique represents a scientifically validated non-pharmacological intervention demonstrating efficacy in managing cancer-related anorexia and sleep disturbances through systematic elicitation of the relaxation response, activating the parasympathetic nervous system and producing physiological changes including decreased heart rate, blood pressure, and stress hormone levels. **Oncology Nursing Society (ONS, 2024)** emphasizes that professional nurses play pivotal roles in comprehensive management of these symptoms, serving as patient advocates, educators, and care coordinators through thorough symptom assessment using validated screening tools, implementation of evidence-based interventions, patient education regarding symptom management strategies, and continuous monitoring of treatment responses.

Significance of the study:

According to **Fuki et al. (2025)**, cancer-associated anorexia represents a significant clinical problem affecting substantial proportions of chemotherapy patients, contributing to malnutrition, compromised immune function, and reduced quality of life, with **Blauwhoff-Buskermolen et al. (2016)** reporting approximately 40% prevalence of appetite loss, increasing to over 50% in advanced disease. Similarly, **Hu and Chen (2025)** documented through systematic review and meta-analysis that sleep disturbances demonstrate equivalent prevalence with pooled rates of 60.7% (95% CI 58.1–63.3%), while **Gyawali et al. (2024)** reported 56% prevalence of significant sleep disorders. Both conditions substantially exceed general population rates and create complex symptom interactions that compromise recovery, treatment tolerance, and overall well-being through disease-related factors, treatment side effects, and psychological distress.

Recent systematic reviews and clinical trials have provided compelling evidence for the effectiveness of Benson's relaxation technique in managing cancer-related symptoms, particularly sleep disturbances and appetite loss. **Nazari et al. (2023)** demonstrated in a comprehensive systematic review published in 2023 that the Benson relaxation method could improve sleep quality, appetite, anxiety, and quality of life among cancer patients undergoing various treatment modalities, with researchers recommending the use of Benson relaxation

technique to improve health-related outcomes in cancer patients.

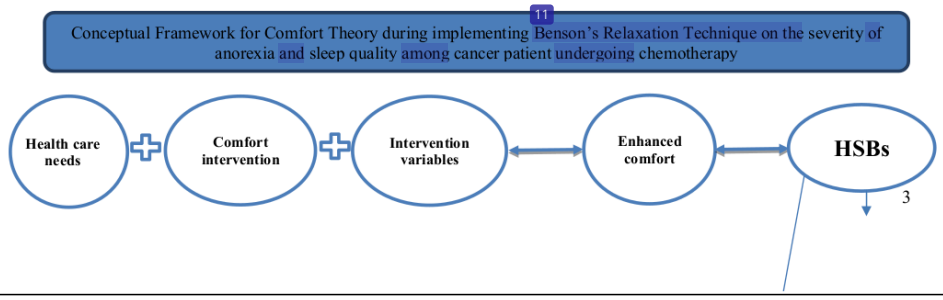
Despite promising preliminary evidence, significant gaps exist in the literature examining the effectiveness of Benson's relaxation technique for simultaneously addressing anorexia severity and sleep quality in cancer patients undergoing chemotherapy. The majority of published research has investigated sleep disturbances or appetite-related symptoms independently, rather than examining their interconnected relationship and the potential for a single intervention to address both concerns concurrently. Additionally, many studies demonstrate methodological limitations including small sample sizes, inadequate control groups, and short follow-up periods, limiting generalizability and long-term validity of findings. This highlights the critical need for robust, well-designed clinical trials targeting these co-occurring symptoms in chemotherapy patients.

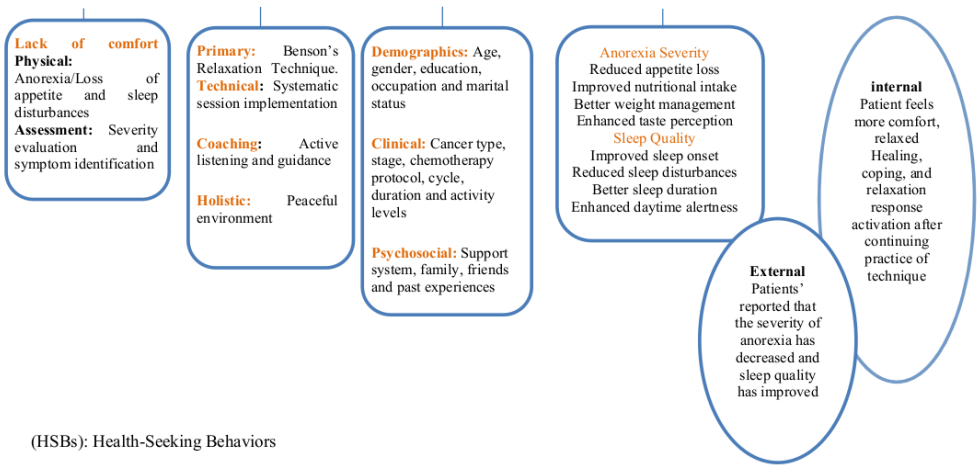
Therefore, this study aims to evaluate the effect of implementing Benson's relaxation technique on the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy.

Theory of the study:

This study utilizes Kolcaba's Comfort Theory (CT), a holistic framework for patient care that emphasizes maximizing comfort in healthcare settings. The theory addresses four essential components of comfort: relief, ease, transcendence, and holistic comfort, to enhance patient well-being and improve overall health outcomes. Kolcaba's hypothesizes that there is a relationship between patients' needs, nursing interventions, comfort, and outcomes **(Lin et al., 2023)**.

The framework demonstrates that cancer patients undergoing chemotherapy experience healthcare needs in the form of anorexia and sleep disturbances, which are among the most commonly reported symptoms with significant prevalence during treatment. Through the systematic implementation of Benson's Relaxation Technique as a comfort intervention, while considering relevant intervening variables, patients achieve enhanced comfort manifested as improved appetite and sleep quality. This leads to positive health-seeking behaviors including continued practice of relaxation techniques and improved engagement in their cancer treatment regimen. The theoretical foundation is supported by contemporary evidence showing that relaxation interventions can effectively address chemotherapy-induced symptoms and improve overall quality of life in oncology patients.





(HSBs): Health-Seeking Behaviors

Figure (1) Framework for Comfort Theory

Designated by the researcher based on Lin et al. (2023): Interventions and practices using comfort theory of Kolcaba to promote adults' comfort an evidence and gap map protocol of international effectiveness studies. *SystematicReviews*, *12*(1). https://doi.org/10.1186/s13643-023-02202-8

Aim of the Study

This study aimed to evaluate the effect of implementing Benson's relaxation technique on the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy throughout the following objectives:

1. Assess the severity of anorexia among cancer patients undergoing chemotherapy.
2. Assess the quality of sleep among cancer patients undergoing chemotherapy.
3. Implement Benson's relaxation technique among cancer patients undergoing chemotherapy.
4. Evaluate the effect of Benson's relaxation technique on the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy.

Research Hypothesis:

H_0: At the end of the study, cancer patients undergoing chemotherapy who receive Benson's relaxation technique will not demonstrate significantly reduced the severity of anorexia and improved quality of sleep compared to patients who receive routine hospital care, as measured by instruments III and IV.

H_1: At the end of the study, cancer patients undergoing chemotherapy who receive Benson's relaxation technique will demonstrate significantly reduced the severity of anorexia and improved quality of sleep compared to patients who receive routine hospital care, as measured by instruments III and IV.

Subjects and method:

Research design:

A quasi-experimental research design was utilized to conduct the study.

Setting:

This study was conducted in the medical and surgical oncology department at National Cancer Institute (NCI) affiliated with Cairo University Hospitals, Cairo, Egypt.

Sampling:

A purposive sample of 86 adult cancer patients from both genders undergoing chemotherapy. They were recruited from the above-mentioned setting enrolled to current study and divided into two equal study and control groups, 43 patients for each group.

Study group: Cancer patients undergoing chemotherapy who received Benson's relaxation technique

Control group: Cancer patients who received routine hospital care only.

The patients in both groups were selected according to the following criteria.

Inclusion criteria:

1. Patients aged between 20-60 years.
2. Cancer patients who received at least one chemotherapy cycle.
3. Patients having the ability to communicate.
4. Willing to participate in the study.

Exclusion criteria:

1. Patients with physical or mental handicapped.
2. Patients who had limits on movements to relax.
3. Patients take an appetite stimulant as megestrol acetate, corticosteroids, thalidomide.
4. Patients take hypnotics, opioid analgesics and anxiolytics.
5. Patients who use sleeping pills or those with side effects causing sleep.
6. Patients taking hormonal therapy such as tamoxifen
7. Patients with chewing problems
8. Patients who have hearing impairment.

Tools for data collection:

Four tools were utilized to collect data pertinent to the study:

Tool 1: A structured Interviewing Questionnaire:

This tool was developed by the researcher after reviewing recent relevant literature and scientific references **(Efendi et al., 2022; Harorani et al., 2020; Borner et al., 2018)** and was completed by the researcher. It included two parts to cover the following data:

Part (I) Patients' demographic data: This part was used to address the personal data of the patients and consisted of characteristics of studied patients to collect baseline data which includes age, sex, marital status, educational level, occupation, residence, activity levels, smoking and sleep troubles.

Part (II) Patients' health history: This part was devoted to assessing past and present health history, which included presence of chronic disease, previous types of cancer, previous history of chemotherapy, period of chemotherapy completion, past cancer treatment modalities, current diagnosis (types), staging, duration of cancer, number of prescribed and received chemotherapy cycles (treatment line), most common chemotherapy protocols, duration of anorexia, types of hospital visits, weight, height, and body mass index (BMI).

Tool 2: Benson's Relaxation Technique Observational Checklist (BRTOC):

This tool was adapted from **Benson and Klipper (2001)**. This tool aimed to assess patients' practices regarding Benson's relaxation technique when receiving chemotherapy. The checklist included five steps related to Benson's relaxation technique intervention. Cronbach's alpha ranges from 0.834 to 0.839, which is considered highly acceptable.

Scoring system: One point was given for each step that was done correctly, zero for steps that were done incorrectly or not done. The total patients' practice score was computed out of five points. Total practice score: 5 equals 100%. The total score was calculated as follows: satisfactory practice level at 80% of the score. If the patient scored less than 80%, the patient was considered to have unsatisfactory practice and repeated the technique until achieving the target score.

Tool 3: Anorexia Scale:

This scale was adopted from **Sheta and Ali (2022)**. This scale aimed to examine the severity of anorexia and includes two parts as follows:

Part (I): Visual Analogue Appetite Scale (VAS): This scale was adapted from **Van Elsacker et al. (2017)** to assess the severity of anorexia among cancer patients undergoing chemotherapy. This scale consists of a 10 cm ruler on which one side shows "good appetite = 0" and the other side shows "anorexia = 10". Patients can self-report their appetite using this scale. Cronbach's alpha ranges from 0.808 to 0.809, which is considered highly acceptable.

Scoring system: The total scores of the visual analogue appetite scale range from 0 to 10, where:

- 0 was considered "no anorexia & good appetite"
- 1-3 was considered "mild anorexia"
- 4-6 was considered "moderate anorexia"

- 7-10 was considered "severe anorexia"

Part (II): The Functional Assessment of Anorexia/Cachexia Therapy-Anorexia/Cachexia Subscale (FAACT–A/CS):

This tool was adapted from **Gelhorn et al. (2019)** and validated by **Blauwhoff-Buskermolen et al. (2016)** (4th version, Dutch) for qualitative and quantitative diagnosis of anorexia. Cronbach's alpha ranges from 0.827 to 0.829, which is considered highly acceptable.

Scoring system: This FAACT–A/CS consists of 12 questions related to appetite and food intake. Each question is rated on a 5-point Likert scale (0 = not at all, 1 = a little bit, 2 = somewhat, 3 = quite a bit, 4 = very much). The sum score ranges from 0 to 48, whereby a lower score indicates less appetite and a higher score indicates good appetite. A total score of ≤37 was considered to indicate the presence of anorexia, while a score of ≥38 was considered to indicate the absence of anorexia (good appetite). The scores of negatively worded items were reversed, which were items 3 to 11, with the rating scale having the following grades for negative responses (not at all = 4, a little bit = 3, somewhat = 2, quite a bit = 1, very much = 0). The scale includes an anorexia symptoms subscale (5 items: 1-5), an anorexia concerns subscale (4 items: 8-11), and other items related to the scale (3 items: 6th, 7th, and 12th).

Tool 4: St. Mary's Hospital Sleep Questionnaire (SMHSQ):

This tool was adapted from **Harorani et al. (2020)**. The researcher divided this questionnaire into two sections; section one illustrated in questions (1,2,3,4,7,8and14) and presented sleep quantity while section two illustrated in questions (5,6,9,10,11,12, and13) and presented sleep quality. St Mary's Hospital Sleep Questionnaire involved fourteen questions (both Likert type and open- ended questions) to evaluate patients' previous night's sleep quantity and quality among cancer patients undergoing chemotherapy. Its validity and reliability have been measured and confirmed in many previous studies. Cronbach's alpha ranges from 0.967 to 0.968, which is considered highly acceptable.

Scoring system: This questionnaire divided into two sections; section one illustrated in questions (1,2,3,4,7,8and14) and represented sleep quantity while section two illustrated in questions (5,6,9,10,11,12, and13) and represented sleep quality. Scores ranged between 6 and 38, which reflected section two of the questionnaire. A score from 6 to 16 was defined as poor sleep quality; a score from 17 to 27 was defined as average sleep quality and a score from 28 to 38 was defined as good sleep quality.

Validity:

Five experts in medical-surgical nursing, faculty of nursing, Helwan university reviewed the developed tools and assessed the content validity, and needed modifications were made.

Reliability:

The reliability of the tools was assessed by measuring their internal consistency with Cronbach's alpha coefficient test. The results indicated a reliability score of 0.839 for the Benson's Relaxation Technique Observational Checklist (BRTOC) **(Benson & Klipper, 2001)**.

The Visual Analogue Appetite Scale (VAS) showed a reliability score of 0.808 **(Van Elsacker et al., 2017)**. The Functional Assessment of Anorexia/Cachexia Therapy- Anorexia/Cachexia Subscale (FAACT–A/CS) showed a reliability score of 0.828 **(Gelhorn et al., 2019)**. St. Mary's Hospital Sleep Questionnaire (SMHSQ) showed a reliability score of 0.967 **(Harorani et al., 2020)**. These results demonstrate that all tools are instruments with high reliability.

Ethical considerations:

Before the commencement of the study, ethical approval was obtained from the Scientific Research Ethical Committee at the Faculty of Nursing, Helwan University . Additional approval was granted by the director of the National Cancer Institute, Cairo, Egypt. Informal oral and written consent was obtained from all patients after they were thoroughly informed about the study's purpose, procedures, and anticipated outcomes. Participation was entirely voluntary, and patients were assured that they could withdraw at any time without any negative consequences. They were also assured that the study posed no physical or psychological harm. The patient's participation was treated with full ethical integrity. The study procedures were designed to be entirely harmless to the patient, ensuring their comfort, safety, and dignity throughout. Confidentiality and anonymity were strictly maintained by all participants.

Pilot study:

The pilot study was conducted on 10% (9 patients) of the sample studied to examine the clarity of questions and the time needed to complete the study tools. Based on the results, modifications were made. Subjects of the pilot study were included in the study because no significant modifications were required.

Fieldwork:

According to the selected theoretical framework:

The study was extended over 8 months and started at the beginning of April 2024 and was completed and ended on January 2025. The researcher visited the selected setting regularly, three days per week and selected patients regarding inclusion and exclusion criteria.

Field work includes three phases based on conceptual framework for comfort theory:

I-First phase (Health care needs)

During the first phase focusing on **healthcare needs assessment**, the researcher visited the selected setting three days per week to identify eligible patients based on inclusion and exclusion criteria, then randomly allocated them to study or control groups. Individual patient assessments were conducted after at least one chemotherapy cycle before implementing Benson's Relaxation Technique, the researcher assessed demographic data and health history collected using **Tool I** for both groups. Weight and body mass index were measured twice using a standard digital scale (180kg capacity, 0.1kg accuracy) based on **Best and Shepherd (2020)** at baseline after at least one chemotherapy cycle and at one-month post-intervention. Anorexia severity was assessed four times using Tool III (Anorexia Scale) at baseline, 24 hours post-intervention, 48 hours post-intervention, and one-month follow-up.

Sleep quality was similarly evaluated four times using Tool IV at the same time points. Each patient assessment required approximately 15-20 minutes to complete.

II-Second phase (Comfort interventions)

During the second phase, the researcher implemented comfort interventions **(Benson's Relaxation Technique)** following baseline assessment. The control group received standard hospital care without any intervention, while the study group underwent training in Benson's Relaxation Technique over less than two weeks while teaching the patient technique based on **Ghoul et al. (2025)**, The technique encompassing positioning, deep breathing exercises, progressive muscle relaxation, and passive attitude components. Patient satisfaction was evaluated three time using the Benson's Relaxation Technique Observational Checklist (BRTOC), and upon achieving satisfactory practice levels based on **Benson and Klipper (2001)**, after the patients achieved satisfactory practice levels and mastery the technique, patients implemented the technique independently twice daily for 15-30 minutes before meals and bedtime and before chemotherapy cycle for one month.

III-Third phase (Enhanced Comfort):

During the third phase focusing on **enhanced comfort**, the researcher evaluated the effect of Benson's Relaxation Technique on the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy. Objectively, the researcher re-evaluated the severity of anorexia in both groups using Tool III (Anorexia Scale), which incorporated a visual analog scale and The Functional Assessment of Anorexia/Cachexia Therapy-Anorexia/Cachexia Subscale. Sleep quality was objectively re-evaluated using Tool IV (St. Mary's Hospital Sleep Questionnaire). Subjective evaluation was obtained through patient verbalization regarding their anorexia severity and sleep quality using the same tools. Both anorexia severity and sleep quality assessments were conducted at four time points: pre-implementation (baseline), 24 hours post-implementation, 48 hours post-implementation, and one-month follow-up. The evaluation process took 15-20 minutes per patient.

Results:

Table (1): Frequency and percentage distribution for the study and control group according to their demographic characteristics (n=86).

Demographic characteristics	Study group (n=43)		Control group (n=43)		Chi-Square Test	
	No.	%	No.	%	X^2 test	P-Value
Age / years						
Mean ± SD	**40.79±9.13**		**41.21±9.29**		t=0.203	0.839
Gender						
Male	35	**81.4**	30	**69.8**	1.575	0.209
Female	8	18.6	13	30.2		
Marital status						
Single	5	11.6	11	25.6	2.862	0.412
Married	31	**72.1**	27	**62.8**		
Divorced	4	9.3	3	7.0		
Widow	3	7.0	2	4.7		
Educational levels						
Do not read and write	5	11.6	5	11.6	1.964	0.580
Read and write	3	7.0	7	16.3		
Secondary education	24	**55.8**	20	**46.5**		
University education	11	25.6	11	25.6		
Activity levels						
Independent	10	23.3	7	16.3	1.329	0.515
Need assistant	25	**58.1**	23	**53.5**		
Dependent	8	18.6	13	30.2		
Smoking						
Yes	32	**74.4**	25	**58.1**	2.549	0.110
No	11	25.6	18	41.9		
Sleep troubles						
Restless	19	44.2	27	62.8	3.617	0.463
Stomach pain	9	20.9	8	18.6		
Noise	6	14	3	7.0		
Light	5	11.6	3	7.0		
Nightmare	4	9.3	2	4.7		

X^2=Chi-square of independency test P-value > 0.05 **Non-significant (NS)** * P-value ≤ 0.05 **Significant (S)**

Table 1 shows that there was no statistically significant difference at P-value > 0.05 between both groups regarding their demographic characteristics (age, gender, marital status, educational levels, activity levels, smoking, and sleep disturbances), which indicated proper matching between the two groups in these variables.

Table (2): Frequency and percentage distribution for the study and control group according to their severity of anorexia before and after implementing Benson's relaxation technique throughout study phases (n=86).

Severity of Anorexia		Study group (n=43)		Control group (n=43)		Chi square test	P-Value
		No.	%	No.	%		
Pre-implementation							
• No anorexia		0	0.0	0	0.0	1.877	0.391
• Mild		4	9.3	4	9.3		
• Moderate		14	32.6	20	46.5		
• Severe		25	58.1	19	44.2		
Post implementation							
24 hrs	No anorexia	7	16.3	1	2.3	14.778	**0.002***
	Mild	11	25.6	2	4.7		
	Moderate	15	34.8	20	46.5		
	Severe	10	23.3	20	46.5		
48 hrs	No anorexia	12	27.9	1	2.3	27.918	**0.001***
	Mild	14	32.6	2	4.7		
	Moderate	10	23.3	27	62.8		
	Severe	7	16.3	13	30.2		
One month	No anorexia	35	81.4	3	7	37.426	**0.001***
	Mild	4	9.3	8	18.6		
	Moderate	2	4.7	11	25.6		
	Severe	2	4.7	21	48.8		

X^2=Chi-square of independency test P-value > 0.05 **Non-significant (NS)** * P-value ≤ 0.05 **Significant (S)**

Table 2 reveals that there was no statistically significant difference between both groups regarding their severity of anorexia pre-implementation of Benson's relaxation technique at P-value = 0.391. However, there was a statistically significant difference between both groups regarding their severity of anorexia post-24 hours, post-48 hours, and follow-up at one month of implementation at P-values = 0.002, < 0.001, and < 0.001, respectively.

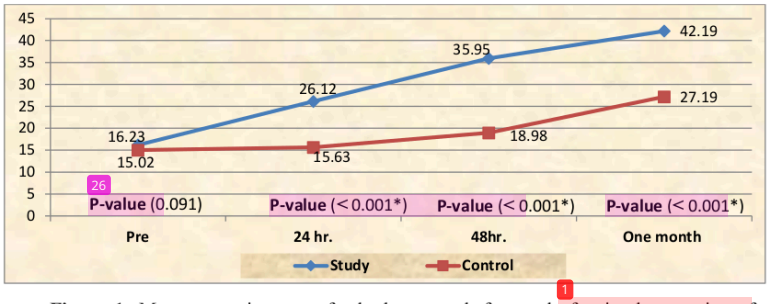


Figure 1: Mean anorexia scores for both groups before and after implementation of Benson's relaxation technique throughout study phases (n=86).

Figure (1): Illustrates that there was no statistically significant difference between both groups regarding their total mean anorexia scores before implementation of Benson's

relaxation technique (P = 0.091). However, there were highly significant statistical differences between both groups regarding their total mean anorexia scores at 24 hours, 48 hours, and one-month follow-up after implementation (P < 0.001).

Table (3): Frequency and percentage distribution for the study and control group according to their quality of sleep before and after implementing Benson's relaxation technique throughout study phases (n=86).

Total level of sleep quality		Study group (n=43)		Control group (n=43)		Chi square test	P-Value
		No.	%	No.	%		
Pre-implementation:							
Poor		20	46.5	22	51.2	0.966	0.617
Average		19	44.2	15	34.9		
Good		4	9.3	6	14.0		
Post implementation:							
24 hrs	Poor	13	30.2	22	51.2	4.581	0.101
	Average	21	48.85	17	39.5		
	Good	9	20.9	4	9.3		
48 hrs	Poor	8	18.6	23	53.5	13.947	**<0.001***
	Average	18	41.9	16	37. 2		
	Good	17	39.5	4	9.3		
One month	Poor	0	0.0	26	60.5	44.806	**<0.001***
	Average	13	30.2	8	18.6		
	Good	30	69.8	9	20.9		

X^2=Chi-square of independency test P-value > 0.05 **Non-significant (NS)** * P-value ≤ 0.05 **Significant (S)**

Table 3 shows that there was no statistically significant difference between both groups regarding their total level of sleep quality pre-implementation and post-24 hours of Benson's relaxation technique at P-values = 0.617 and 0.101, respectively. However, there was a statistically significant difference between both groups regarding their total level of sleep quality post-48 hours and follow-up at one month of implementation at P-values < 0.001 and < 0.001, respectively.

Table (4): Mean scores of the severity of anorexia and quality of sleep among studied

patients throughout study phases (n=43).

Items	Pre	Post			Friedman Test	
		24 hrs	48hrs	One month	Test	P-value
Severity of anorexia	6.75+2.21	5.84+1.24	3.20+0.89	1.51+0.32	12.452	**<0.001***
Quality of sleep	14.28±5.36	17.95±7.49	20.60±7.98	29.63±7.17	16.934	**<0.001***

P-value= significance of difference between the studied periods P-value > 0.05 **Non-significant (NS)** * P-value ≤ 0.05 **Significant (S)**

Table 4 shows that there was a statistically significant difference between the studied phases among the study group regarding mean scores of the severity of anorexia and quality of sleep at P-value < 0.001.

Table 5: Correlation between the severity of anorexia and quality of sleep among the study group before and after implementing Benson's relaxation technique throughout study phases (n=43).

Items	Pre /post	Severity of anorexia	
		r	P-value
Quality of sleep	**Pre**	-0.139	**0.016***
	24 hrs post	-0.188	**0.027***
	48 hrs post	-0.267	**0.029***
	One-month post	-0.435	**0.024***

r= spearman correlation coefficient P-value > 0.05 **Non-significant (NS)** * P-value ≤ 0.05 **Significant (S)**

Table 5 shows that there was a statistically significant negative correlation between the severity of anorexia and quality of sleep among the study group before and after implementing Benson's relaxation technique throughout study phases at P-value < 0.05.

Discussion

According to **Horani et al. (2020),** who reported in a randomized controlled trial that Benson relaxation technique has demonstrated significant therapeutic potential in ameliorating chemotherapy-induced anorexia and sleep disturbances among cancer patients undergoing chemotherapy. A randomized controlled trial specifically evaluating the effects of Benson's relaxation response found that this complementary intervention significantly improved both sleep quality and anorexia symptoms compared to standard care alone.

Similarly, **Nazari et al. (2023)** demonstrated systematic review evidence supporting the technique's efficacy in enhancing sleep quality, appetite, anxiety, and overall quality of life in cancer populations. Given this established therapeutic potential, the present evidence sought to further examine Benson's relaxation technique as a complementary intervention for managing the complex symptom cluster of anorexia and sleep disturbances among cancer patients undergoing chemotherapy. So, the aim of the current study was to evaluate the effect of implementing Benson's relaxation technique on the severity of anorexia and quality of sleep among cancer patients undergoing chemotherapy

In the present study, findings regarding to the patient's characteristics revealed that, demographic and medical characteristics in both the study and control groups were not significantly dissimilar; this means that the participants were selected from identical population of patients undergoing urostomy with good random allocation obtained. Also, this demographic homogeneity robustly supports internal validity, as any post intervention differences are likely attributable to Benson's Relaxation Technique rather than baseline imbalances.

The mean age of the studied patients in both study and control groups was (40.79±9.13, 41.21±9.29) respectively. The present study finding validates that the mean age of ~41 years in both study groups reflects current oncology epidemiological trends rather than just purposive sampling.

This finding was supported with **Shiels et al. (2025)**, who conducted a comprehensive National Institutes of Health (NIH) analysis in the United States entitled "Trends in cancer incidence and mortality rates in early-onset and older-onset age groups." The study found that the incidence of fourteen cancer types increased among people under age fifty, with data analyzed across age groups including those aged forty to forty-nine years specifically. This study directly validates the prominence of the 40s age group in contemporary cancer research.

Conversely, other studies report different age trends. **Johannessen et al. (2023)** conducted a longitudinal study in Norway that evaluated age-related differences in the occurrence, severity, and distress of symptoms in older patients at the initiation of chemotherapy and found that patients aged 65–74 and 75+ reported significantly higher symptom burdens and distress compared to younger adults, indicating greater vulnerability and higher representation among older age groups in oncology settings. **From the researcher's point of view**, these variations in age distribution across studies may reflect differences in cancer types, healthcare access, cultural factors, and study settings.

Concerning, gender, the present study revealed that males were more prevalent than

females, with the majority of the studied patients in both the study and control groups being male. This predominance may be attributed to regional or cultural differences in healthcare access, gender-specific cancer types (e.g., higher rates of gastrointestinal cancers, lung cancer, or acute myeloid leukemia in males), or patterns of healthcare-seeking behavior (e.g., smoking).

This finding was in agreement with findings from several regional studies. **Qattan (2023)** conducted an observational descriptive population-based epidemiological study from the Saudi cancer registry that analyzed the incidence rate of Non-Hodgkin's lymphoma in Saudi Arabia. The study demonstrated that the majority of cancer patients were male. Likewise, **Wang et al. (2024)** conducted a cross-sectional study in China that assessed the symptom burden and clusters during chemotherapy in patients with lung cancer. The study revealed that the majority of cancer patients were male. The researchers attributed this to the higher incidence of certain cancers among men, as well as gender differences in health behavior and occupational exposure.

Conversely, other studies contradicted these findings, reporting higher female representation. **Kang et al. (2023)** conducted a cross-sectional study in Seoul, Korea that evaluated the burden of symptoms in patients with various types of cancers during chemotherapy or radiation therapy using the PRO-CTCAE (Patient-Reported Outcome Version of the Common Terminology Criteria for Adverse Events) and its impact on quality of life. The study found that the majority of cancer patients receiving chemotherapy were females, likely due to breast and gynecological cancers being more prevalent and often treated with aggressive chemotherapy.

Concerning marital status, the present study demonstrated that more than two thirds of the study group and more than three fifths of the control group were married. This predominance may be attributed to the fact that marriage often provides a support system that facilitates engagement with comprehensive cancer care, including relaxation interventions that can improve quality of life during treatment.

This finding is corroborated by similar studies. Likewise, **Daralina et al. (2024),** who assessed the relationship between spirituality and resilience among patients who suffered from breast cancer and are undergoing chemotherapy at Aceh Provincial General Hospital in Indonesia, demonstrated that married patients tend to have stronger psychological resilience and better adherence to treatment regimens, making them more likely to participate in structured care programs, such as Benson's Relaxation Technique."

Challenging this view, **Alyabsi et al. (2021)** conducted a retrospective cohort study using data from the Cancer Registry of the Ministry of National Guard-Health Affairs in Saudi Arabia, entitled "The effect of marital status on stage at diagnosis and survival in Saudis diagnosed with colorectal cancer." The study reported a more varied marital status distribution among cancer patients in Saudi Arabia, with a notable proportion being unmarried (single or widowed). These individuals reportedly experienced greater emotional distress and were less likely to participate in supportive interventions. The findings indicated that unmarried patients have a higher risk of late presentation and cancer-specific mortality.

From the perspective of clinical measurement, regarding the severity of anorexia for both study and control groups before implementing Benson's relaxation technique using Visual Analog Scale (VAS). There was no statistically significant difference between both groups regarding their severity of anorexia at P-value 0.391, which indicated proper matching between two groups in these variables.

The majority of study groups and control groups experienced moderate to severe anorexia before implementation Benson's relaxation technique. Cancer patients undergoing chemotherapy commonly experience anorexia (loss of appetite) due to a complex interplay of physiological, psychological, and treatment-related factors. This phenomenon significantly impacts patient outcomes, nutritional status, and quality of life.

This finding was consistent with **Sandhya et al. (2023)**, who conducted a randomized, double-blind, parallel-group, placebo-controlled trial in a tertiary care center in South India, published in the American Society of Clinical Oncology Journal entitled "Randomized double-blind placebo-controlled study of Olanzapine for chemotherapy-related anorexia in patients with locally advanced or metastatic gastric, Hepatopancreatic biliary, and lung cancer," and demonstrated that anorexia is remarkably prevalent among cancer patients and there was no statistically significant difference between both groups regarding severity.

Additionally, this finding was affirmed by **Molfino et al. (2021)**, who conducted a cross-sectional study involving 438 cancer patients from 7 cancer centers worldwide in Rome, Italy, entitled "Cancer-associated anorexia: Validity and performance overtime of different appetite tools among patients at their first cancer diagnosis." The study demonstrated that prevalence of anorexia was around two fifths and more than two fifths when assessed by FAACT-score and VAS, respectively, confirming the reliability of visual analog scales and FAACT for assessment severity of anorexia.

In consideration of follow-up assessment phase, regarding the severity of anorexia for both study and control groups after implementing Benson's relaxation technique using Visual Analog Scale (VAS) and FAACT-A/CS. after one-month post- implementation, the therapeutic effect of the technique was evident, there was a highly statistically significant difference between both groups regarding their severity of anorexia at p=0.001*.These findings was aligned with **Sheta and Ali (2022)**, who concluded a quasi-experimental study in Egypt entitled "Effect of Benson's Relaxation Technique on Anorexia in Cancer Patients Undergoing Chemotherapy". The study demonstrated that Benson's relaxation technique had a positive effect in reducing and improving anorexia in cancer patients undergoing chemotherapy, all mean total scores of anorexia scale for cancer patients improved significantly after three months of practice and the severity of anorexia was decreased.

Bedsides, this finding was in harmony with **Mohamed et al. (2022)**, who concluded a quasi-experimental study in Egypt entitled "Effect of Benson's Relaxation Response on Anorexia in Cancer Patients Undergoing Chemotherapy. "The study revealed that the anorexia median score differed and improved significantly in the study group compared to the control group post- implementation Benson's relaxation response after 21 days of practice, reporting, concerning severity of anorexia, it was represented that more than half of patients had severe anorexia before practicing BRR compared to a third after practicing BRR. While

in the control group severe anorexia increased from a quarter to almost half.

On contrary, **Abu Maloh et al. (2021)** conducted a systematic review of randomized controlled trials in Malaysia entitled “Efficacy of Benson’s relaxation technique on anxiety and depression among patients undergoing hemodialysis.” The systematic review reported that **Kurniasari et al. (2016)** who conducted a study in Yogyakarta about "The Effect Benson Relaxation Technique on Anxiety in Hemodialysis Patients" demonstrating that Benson's relaxation technique has no effect on anxiety scores of hemodialysis patients. This contradiction may be explained by this study implementing Benson's relaxation for a period of two weeks only and this period was not enough to decrease the level of anxiety while the current study was conducted for one month.

Concerning the assessment of sleep quality for study and control groups before and after implementing Benson's relaxation technique, the current study findings demonstrate distinct patterns across implementation phases. With respect to pre-implementation comparisons, there were no statistically significant difference between study and control groups regarding quality of sleep. The lack of significant differences between study and control groups before implementing the relaxation technique indicates good baseline equivalence. This strengthens the current study design by showing that both groups had similar sleep disturbances initially, which is common among cancer patients receiving chemotherapy. These findings were strongly supported with **Sarı et al. (2024),** who conducted a randomized controlled study in Türkiye entitled “The effect of progressive muscle relaxation exercises on sleep quality in cancer patients undergoing chemotherapy.” The study reported majority of participants experience sleep disturbances and there were no statistically significant difference study and control groups regarding sleep quality.

Additionally, **Kahreh et al. (2024)**, who conducted a randomized clinical trial study in Kermanshah University of Medical Sciences, Kermanshah, Iran, entitled “The effect of Jacobson relaxation technique on sleep quality of patients with cancer under chemotherapy.” This study reported that there were no significant differences between study and control groups regarding sleep quality. This homogeneity robustly supports internal validity, as any post intervention differences are likely attributable to relaxation Technique rather than baseline imbalances.

Considering the implementation of Benson's relaxation technique on sleep quality among study group throughout the study periods. There was a statistically significant difference between study and control groups following the implementation of Benson's relaxation technique across all study phases. The significant differences that emerged after implementing Benson's relaxation technique suggest the intervention was genuinely effective. Benson's relaxation technique activates the parasympathetic nervous system, reducing cortisol levels and promoting the body's natural sleep-wake cycle. It decreases muscle tension and heart rate, creating physical conditions conducive to sleep. The technique may help regulate melatonin production, which is often disrupted in cancer patients.

This finding was aligned well with the established evidence base. A systematic review conducted by **Nazari et al. (2023)** in Iran to evaluate the effect of Benson relaxation technique on cancer patients showed that the Benson relaxation technique could improve

quality of sleep, appetite, anxiety, and quality of life among cancer patients. In accordance with this study, **Nezhad et al. (2024),** who conducted quasi-experimental study in Iran entitled "The Effect of Benson's Relaxation Response on Sleep Quality in the Patients with Colorectal Cancer". The study concluded that Benson's Relaxation Response can improve sleep quality in patients with colorectal cancer in the dimensions of subjective sleep quality, sleep latency, sleep efficiency, sleep disturbances, and overall sleep quality. The researchers supported that Benson's relaxation technique activates the parasympathetic nervous system, reducing cortisol levels and promoting the body's natural sleep-wake cycle in cancer patients.

From the perspective of correlational analysis. The current study demonstrated that there was a statistically significant negative correlation between severity of anorexia and quality of sleep among the study group post implementing Benson's relaxation technique at one month at P-value <0.05. This finding indicates that as the severity of anorexia decreased, sleep quality correspondingly improved, suggesting a bidirectional relationship between these two critical symptoms in the cancer care continuum.

This finding was closely supported with recent studies examining the effect of Benson's relaxation technique on cancer populations. **Harorani et al. (2020)** conducted a randomized controlled trial study in Iran about "The effect of Benson's relaxation response on sleep quality and anorexia in cancer patients undergoing chemotherapy," demonstrating that there was a significant statistical negative correlation between anorexia and sleep quality, which indicates that as the severity of anorexia decreased, sleep quality correspondingly improved, directly supporting the observed correlation in the present study.

Conclusion:

Based on the current study's findings, this study reveals that Benson's relaxation technique is a simple, effective, and non-pharmacological intervention used to help managing symptoms among cancer patients undergoing chemotherapy. Implementing Benson's relaxation technique significantly reduces the severity of anorexia and improves quality of sleep in these patients. Its use as a complementary therapy can enhance overall well-being and help managing common side effects of cancer treatment.

Recommendations

In light of the findings of this study, the following are recommended:

- Providing comprehensive training sessions for healthcare professionals, including oncologists, nurses, and physical therapists, to effectively teach the BRT technique and its application in cancer care.
- Hospitals are recommended to use the Benson's relaxation technique alongside other treatments to alleviate anorexia and symptoms in cancer patients undergoing chemotherapy.

Further studies

- Conducting further research with larger sample sizes and longer follow-up periods to investigate the sustained effects of BRT on anorexia, sleep quality, and overall well-being in cancer patients.
- Explore the potential benefits of combining Benson's relaxation technique with other complementary therapies to maximize positive outcomes.

Acknowledgment

The researchers would like to express heartfelt appreciation to all cancer survivors who generously volunteered to participate in this study on Benson's Relaxation Technique. Their commitment, active participation, and openness to this therapeutic intervention were instrumental to the study's success. We are deeply grateful for the time they invested, their dedicated engagement throughout the process, and the invaluable insights they shared, all of which significantly enhanced the quality and impact of this research

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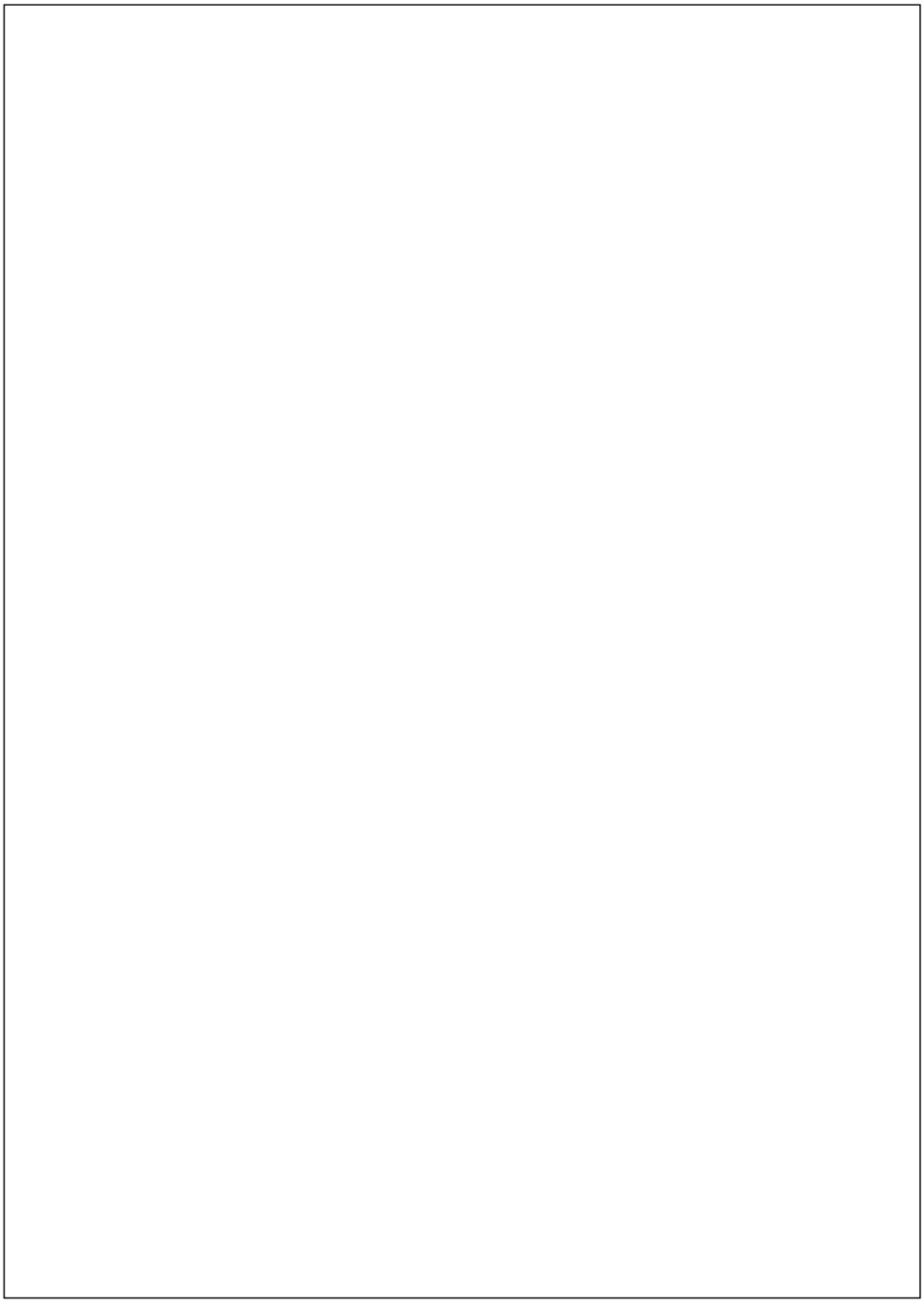

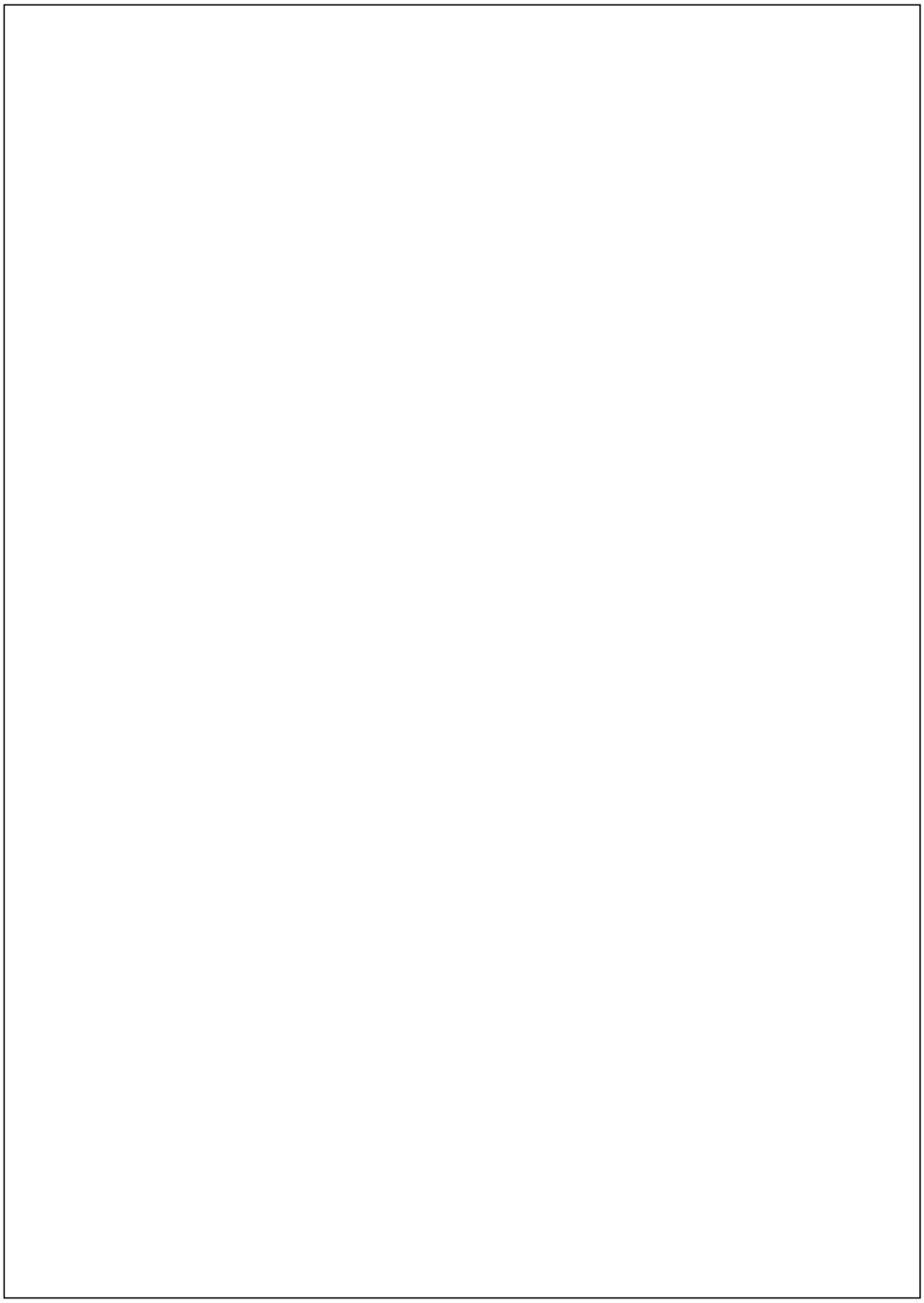

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