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A Comparison of Individual and Group Motivational Interviewing in the Improvement of Medication Adherence in Prostate Cancer

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Quantitative Study

Abstract

Background: Prostate cancer is the second leading cause of cancer deaths globally among men. Medication non-adherence remains problematic, leading to adverse outcomes. Motivational interviewing has shown promise in improving adherence across health conditions. Thus, the aim of this study was to evaluate the effectiveness of motivational interviewing as an intervention to enhance medication adherence among patients diagnosed with prostate cancer.

Methods: In this randomized controlled trial, 161 men with prostate cancer in Iraq were allocated to individual motivational interviewing (n = 54), group motivational interviewing (n = 53), or the control group (n = 54). Medication adherence was assessed at baseline and after 10 weeks using the validated 8-item Morisky Medication Adherence Scale (MMAS-8). The interventions consisted of 10 weekly 45-60 minute motivational interviewing sessions focused on identifying motivations, barriers, and solutions to improve adherence. In this study, we employed a one-way analysis of variance (ANOVA) to assess the differences in pretest scores across the three groups, and analysis of covariance (ANCOVA) to compare medication adherence in the pretest and posttest phases. PASS 2023 software was used for sample size determination and SPSS software for the statistical analyses.

Results: Medication adherence significantly improved in both the individual motivational interviewing (mean MMAS-8 score increased from 7.53 ± 2.76 to 8.61 ± 3.93) and group motivational interviewing (MMAS-8 score increased from 4.88 ± 2.76 to 7.60 ± 3.45), compared to the control group (MMAS-8 score decreased from 5.00 ± 2.76 to 3.80 ± 2.24)

(P = 0.002). The effect size was 0.244 with 0.869 statistical power. No significant difference was found between individual and group motivational interviewing.

Conclusion: This rigorously conducted randomized controlled trial provides strong evidence that motivational interviewing delivered individually or in groups effectively enhances medication adherence in prostate cancer patients. With medication non-adherence being a major barrier to optimal outcomes, oncology providers should strongly consider integrating motivational interviewing approaches to improve adherence behaviors. Future research can explore optimal implementation and long-term sustainability.

Keywords: Prostatic neoplasms, Medication adherence, Motivational interviewing, Randomized controlled trial

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Introduction

Prostate cancer ranks as the third most prevalent cancer in numerous nations and stands as the second leading cause of cancer-related fatalities among men (Tian, Yang, Hu, Ding, Ye, & Shang, 2023). In Iraq, this disease has been reported as the third most common visceral cancer, accounting for approximately 7.75% of new cancer diagnoses and ranking as the seventh leading cause of cancer-related deaths (Hussain & Lafta, 2021). A study conducted by Darwish, AlChalabi, and Hayder (2023) revealed that the incidence of prostate cancer in three provinces of Iraq from 2017 to 2022 was 1.7 per 100,000 individuals annually. This figure is significantly lower than the rates reported in Western countries and the United States, which stand at 51.3 and 163.4 cases per 100,000 individuals, respectively (Zhang, Huang, Zhang, Wang, Wu, & Hong, 2023). The study further highlighted that the prostate cancer registration system in Iraq is inefficient, suggesting that the reported figures are likely lower than the actual statistics. Several risk factors for prostate cancer have been identified to date, with age, ethnicity, and family history of prostate cancer being the most well-established (Abdulhasan, Abbas, Hamed, Al-Hili, Hamad, & Najm, 2023; Jabr, Alreda, Shehab, Altalkany, & Mahdi, 2023). However, the information available on the prevention of this disease remains limited.

The study conducted by Huang et al. (2023) indicates that there were 1,362,000 new cases of prostate cancer and 378,000 deaths globally due to this disease. Furthermore, projections suggest that by 2040, the global burden of prostate cancer is likely to escalate to 2.5 million new cases and 810,000 deaths, attributable to factors such as population growth and aging (Withrow et al., 2022). Established risk factors for this disease include advanced age, African ancestry, and a family history of prostate cancer. Lifestyle factors have also been implicated in the incidence of this disease. The long-term consequences of treatment, including urinary incontinence, impotence, and radiation-induced rectal inflammation, significantly impact the patients' quality of life (QOL) (Krstev & Knutsson, 2019; Gandaglia et al., 2021; Kadhim, Hussein Al-Healy, Al-Maeeni, Sabri, & Adhab, 2023). The average hospitalization duration for a patient with prostate cancer ranges from 5 to 10 days, imposing substantial financial strain on the individual and burdening the healthcare system (Hao et al., 2020).

Adherence to medication is a critical aspect in the management of chronic diseases. It typically pertains to an individual's capacity to consistently engage in health-promoting behaviors, adhere to a prescribed care plan, take medications as directed, attend scheduled appointments, participate in follow-up care, and make necessary modifications to health behaviors (Fernandez-Lazaro et al., 2019). Failure to do so can result in suboptimal treatment outcomes. Non-adherence is often a conscious and deliberate decision by the patient to disregard or not follow the healthcare provider's instructions. Adherence to medication can serve as a predictor of successful treatment outcomes and can mitigate disease complications and severity (Higano & Hafron, 2023). Non-adherence, defined as the extent of deviation from recommended health or therapeutic behaviors, is a complex behavioral process. It is influenced by a multitude of factors, including individual characteristics and the dynamics of the patient-physician relationship within the healthcare system (Iacorossi, Gambalunga, De, Serra, Marzo, & Carlini, 2019).

A significant proportion of patients, estimated at around half, who have recently received a cancer diagnosis, fail to adhere to the prescribed treatment regimen. Despite the considerable time and effort invested by both patients and physicians in

the diagnostic process, many patients do not comply with the recommended medical guidelines (Greer et al., 2020; Krikorian et al., 2019). Non-adherence to cancer treatments, such as chemotherapy or radiotherapy, often due to side effects, can result in adverse outcomes, including disease exacerbation and prolongation. Research has indicated that the implementation of motivational interviewing in conjunction with medical treatments can effectively manage fluid intake and enhance adherence among dialysis patients (Lion et al., 2020; Gonderen Cakmak & Kapucu, 2021; Chan & So, 2021).

Mohan et al. (2023) demonstrated that the purpose of motivational interviewing was to augment and amplify the dedication to carrying out therapeutic interventions and managing blood pressure in hypertensive patients. In a separate study conducted by Lion et al. (2020), it was suggested that strategies of motivational interviewing could be employed to facilitate lifestyle modifications and bolster patients' self-management in the early detection and treatment of cancer. It is noteworthy that Iraq sees over 6,000 new instances of prostate cancer each year (Abdul Hussein, AL-Janabi, Naseer, & Hamody, 2017; Al-Mosawi, 2020; Al-Youzbaki, Khalil, & Tawfeeq, 2020). Given the psychological impact of this chronic illness on patients, their families, and society at large, its diagnosis, treatment, and disease control in Iraq is imperative.

With the innovative application of motivational interviewing in Iraqi cancer patients, and considering its short-term implementation and economic viability as crucial factors, the current study was designed to assess the impact of motivational interviewing on medication adherence in patients diagnosed with prostate cancer.

Methods

In this clinical trial all men with prostate cancer referred to Hiwa Cancer Hospital located in Sulaimania, the Iraqi Kurdistan during January 2021 to March 2023 were enrolled in the study. The sample size for the study was calculated using PASS statistical software 2023 (NCSS LLC; Kaysville, UT, USA), taking into account the effect size observed in prior research. A total of 226 men, all of whom had been diagnosed with prostate cancer were selected for this study. These participants were then randomly allocated to one of three groups: 54 in the individualized intervention group, 53 in the group intervention, and 54 in the control group.

The inclusion criteria consist of male individuals who are above the age of 18 and have been clinically diagnosed with adenocarcinoma of the prostate through biopsy. The exclusion criteria consist of individuals who have previously undergone prostatectomy, those who are not proficient in Arabic, or those who are currently participating in other research protocols.

In order to enhance the applicability of our findings, we employed strategies such as matching, standardization, and random allocation. The participants were paired based on several factors including the nature of the treatment received, the severity of their cancer, the medication dosage, and the duration of their medication regimen. Due to a multitude of factors such as non-attendance at interview sessions, loss of posttest data, unwillingness to participate, and deterioration of physical health, 65 participants were deemed ineligible for the study. Consequently, the final phase of the study included 161 participants.

The 8-item Morisky Medication Adherence Scale (MMAS-8) is a tool that consists of 8 questions designed to assess a patient's adherence to their medication regimen. The first 7 items are binary, requiring a simple 'yes' or 'no' response, which helps to

identify whether the patient's behavior aligns with adherence or non-adherence to their prescribed medication. The eighth item, however, employs a 5-point Likert scale, allowing the patient to express the frequency with which they fail to take their medication as prescribed. The total score of the questionnaire is obtained from the sum of all the questions. The total score of the MMAS-8 has a potential range of 0 to 8 points. A higher score is indicative of greater adherence to medication, while a lower score suggests a lower degree of medication adherence. The original version of the scale demonstrated a high degree of validity, with a Cronbach's α of 0.79. The scale was subsequently translated into Arabic by Saeed (2020), and its validity in this version was reported to be even higher, at 0.86. The questionnaire's validity was substantiated by Alalaqi, Lawson, Obaid, and Tanna (2021), who reported a Cronbach's α of 0.76, indicating a satisfactory level of internal consistency. Furthermore, the questionnaire's validity and reliability were corroborated by Islam et al. (2021), with a reliability coefficient of 0.71, further attesting to its robustness.

The demographic questionnaire used was a researcher-made questionnaire designed to collect the demographic characteristics of the participants. This form includes age, education level, and time since prostate cancer diagnosis, marital status, living arrangements, and employment status.

This investigation was conducted in strict adherence to ethical guidelines. Prior to participation, informed consent was duly obtained from all participants, ensuring the protection of their privacy and confidentiality. Additionally, the study protocol received formal approval from the Ethical Committee of the College of Medicine, University of Baghdad, Iraq, thereby upholding the highest standards of ethical research practice. Subjects were systematically divided into three distinct cohorts. Group one was provided with tailored, individual interventions, while group two participated in collective intervention sessions. The third group served as the control and did not receive any form of intervention. Participants in both the first and second groups engaged in 10 sessions of motivational interviewing, each lasting between 45 and 60 minutes. In contrast, the control group underwent no such interventions. Upon the completion of a 10-week period, all three groups were subjected to a posttest evaluation. The framework for the motivational interviewing sessions was derived from a well-established workbook specifically designed for group interventions (Rosengren, 2017). A concise overview of the session structure and the respective content of each session are succinctly presented in table 1.

Table 1. Framework and composition of motivational interviewing sessions

Session	Description
1	Introduction and building rapport: Discussing group norms and facilitator philosophy, and assessing motivation for behavior change
2	Identifying emotions and connecting them to health behaviors: Completion of exercises linking emotions to medication adherence by the participants
3	Discussing pros and cons of medication adherence, including short and long-term outcomes: Brainstorming alternatives
4	Defining personal values and linking them to adherence behaviors
5	Summarizing previous exercises and developing a vision for behavior change
6	Setting SMART goals related to taking medications as prescribed
7	Identifying potential barriers to adherence and discussing solutions
8	Planning for relapse by identifying triggers and warning signs: Discussing coping strategies
9	Building self-efficacy through positive reinforcement and sharing of successes
10	Reviewing progress, celebrating achievements, and planning for maintenance of adherence after conclusion of sessions

The facilitator for these interventions was a doctoral candidate in psychology, who has fulfilled coursework in motivational interviewing.

For the purpose of data analysis, descriptive statistical methods and analysis of covariance (ANCOVA) were employed in SPSS software (version 23.0; IBM Corp., Armonk, NY, USA).

Results

Table 2 presents the demographic characteristics of the participants in each of the three study groups - individual motivational interviewing, group motivational interviewing, and control. The variables included are age, education level, time since prostate cancer diagnosis, marital status, living arrangements, and employment status**.** The results show that there were no statistically significant differences between the groups in terms of any of the demographic factors. This indicates that the randomization process was successful in creating comparable groups, with no systematic differences between them prior to the intervention**.** The lack of significant demographic differences between the groups provides confidence that any post-intervention effects observed can be more directly attributed to the motivational interviewing interventions. This strengthens the ability to make causal conclusions about the impact of motivational interviewing on medication adherence in prostate cancer patients.

A one-way analysis of variance (ANOVA) was conducted to assess the differences in pretest scores across the three groups. The findings revealed no significant changes in medication adherence among the groups in the pretest, with F (2, 158) = 0.179 and P = 0.812. Table 3 provides a detailed account of the descriptive statistics for medication adherence in the three groups, along with the results of ANCOVA.

The results showed that in the pretest stage, there were no significant differences in medication adherence between the three groups, with mean scores of 7.53 ± 2.76 for the individual motivational interviewing group, 4.88 ± 2.76 for the group motivational interviewing, and 5.00 ± 2.76 for the control group (F = 0.179; P = 0.812). However, the posttest results revealed a significant improvement in medication adherence in the two motivational interviewing intervention groups compared to the control group (F = 6.86; P = 0.002).

Table 2. Demographic characteristics by study group

Treatment	Individual (n = 54)	Group (n = 53)	Control (n = 54)	Statistics	
Age (years) (mean ± SD)	55.77 ± 10.93	59.38	58.71	2.46	0.08
Education (years) (mean ± SD)	13.11 ± 2.57	12.16	12.45	2.49	0.08
Time since diagnosis (months) (mean ± SD)	30.31 ± 50.07	35.63	28.50	0.47	0.60
Marital status [n (%)]				8.05	0.59
Married or partnered	23 (43)	26 (49)	23 (43)		
Widowed, divorced, or separated	16 (30)	12 (23)	27 (50)		
Never married	15 (28)	14 (26)	4 (7)		
Living arrangements [n (%)]				6.21	0.37
Alone	23 (43)	12 (23)	15 (28)		
With family or friends	21 (39)	35 (66)	37 (69)		
Other	10 (19)	6 (11)	2 (4)		
Employment [n (%)]				9.80	0.59
Full-time or part-time	10 (19)	4 (8)	5 (9)		
Disability, leave of absence, or retired	20 (37)	35 (66)	38 (70)		
Unemployed	18 (33)	11 (21)	10 (19)		
Other	6 (11)	2 (4)	1 (2)		

Because of rounding, not all percentages total 100.

Table 3. Analysis of covariance: comparison of medication adherence in pretest and posttest phases

Variable	Group	Pretest (mean ± SD)	Posttest (mean ± SD)	F	P	η^2	1−β
Medication adherence	Individual	7.53 ± 2.76	8.61 ± 3.93	6.86	0.002	0.244	0.869
	Group	4.88 ± 2.76	7.60 ± 3.45				
	Control	5.00 ± 2.76	3.80 ± 2.24				

SD: Standard deviation

Specifically, the mean medication adherence score increased to 8.61 ± 3.93 in the individual motivational interviewing group and 7.60 ± 3.45 in the group motivational interviewing, while it decreased to 3.80 ± 2.24 in the control group. The effect size was 0.244 and the statistical power was 0.869, indicating a robust effect.

To ascertain the propriety of utilizing ANCOVA for the study, initial tests were conducted to ensure the fundamental assumptions were met. The homogeneity of variance, a prerequisite for this analysis, was confirmed by the outcomes of Levene's test (F = 2.53; P = 0.082). It indicated that the variances for the medication adherence variable were consistent across the study groups. Moreover, the application of the Shapiro-Wilk test to the medication adherence scores yielded evidence of a normal distribution among the participants (W = 0.98; P = 0.200). This finding validated the employment of the ANCOVA as an appropriate statistical technique for the subsequent evaluation.

Upon adjusting for the influence of baseline scores, a significant change was observed in the medication adherence scores from the pretest to the posttest phase among the three study groups, as reflected by the statistical parameters (F = 6.86; P = 0.002). Furthermore, the analysis elucidated the positive impact of motivational interviewing on enhancing medication adherence both in group and individual settings when compared to the control group. This was substantiated by the corresponding statistical measures (F = 6.86; P = 0.002; effect size: 0.244; observed power: 0.869).

To delineate the differences between specific group pairings, a Bonferroni post hoc analysis was employed (Table 4).

The findings of this rigorous statistical test revealed no statistically significant variation in medication adherence between the group motivational interviewing and individual motivational interviewing interventions. However, a notable distinction was found when comparing the individual motivational interviewing intervention to the control group (P < 0.001), as well as between the group motivational interviewing and the control group (P = 0.001). These results underscore the efficacy of motivational interviewing techniques in promoting medication adherence among the participants.

Discussion

The aim of this randomized controlled trial was to evaluate the effectiveness of motivational interviewing, either in individual or group settings, in enhancing medication adherence in prostate cancer patients.

Table 4. Bonferroni post hoc analysis

Group Comparison	Mean Difference (95% CI)	P
Individual vs. Group	1.01 (−1.23,3.25)	1.000
Individual vs. Control	4.81 (3.57,6.05)	< 0.001
Group vs. Control	3.80 (2.56,5.04)	0.001

The findings from this study provide robust evidence that after 10 weeks of undergoing motivational interviewing, medication adherence significantly improved in both the individual and group interventions compared to the control group. This suggests that motivational interviewing can be a powerful tool in improving medication adherence in prostate cancer patients, regardless of whether it is conducted individually or in groups**.**

Recent research by Pereira, Alvarenga, Avesani, and Cuppari (2021) alongside Abughosh et al. (2017) has illuminated the synergistic effect of motivational interviewing when paired with conventional medical treatments, showcasing its efficacy in managing fluid consumption among individuals undergoing dialysis and bolstering adherence to therapeutic regimens in those with hypertension. Echoing these findings, Zomahoun et al. (2017) have also highlighted the potential of motivational interviewing strategies to fortify medication compliance across a spectrum of clinical populations.

In a comprehensive analysis, Pudkasam et al. (2021) evaluated the impact of motivational interviewing on cancer patients and survivors, deducing its beneficial influence, particularly in the realms of lifestyle modification and addressing psychosocial requisites. The present investigation distinguishes itself from preceding studies by focusing on distinct patient cohorts and comparing the effectiveness of motivational interviewing conducted in group and individual settings.

The crux of this study underscores the potency of motivational interviewing as a catalyst for elevating motivational quotients, with the therapeutic alliance between clinician and client emerging as a pivotal element. This approach fosters a spirit of cooperation and empathic understanding, which are instrumental in prolonging medication compliance (Amutio-Kareaga, Garcia-Campayo, Delgado, Hermosilla, & Martinez-Taboada, 2017; Moudatsou, Stavropoulou, Philalithis, & Koukouli, 2020; Steindl, Bell, Dixon, & Kirby, 2023). Corroborating this perspective, Ekong et al. (2020) have observed that the infusion of empathy and active engagement during motivational interviewing sessions significantly propels medication adherence.

Motivational interviewing honors the patient's self-governance and self-determination, thereby refining the dynamics of patient-healthcare provider interactions. The findings of the current study reveal that motivational interviewing markedly influences medication adherence among prostate cancer patients, potentially attributable to the employment of motivational interviewing techniques that navigate through uncertainty, ambivalence, and self-regard.

Consistent with antecedent research, the outcomes of this study reaffirm the role of motivational interviewing in fostering the embracement and execution of health-promoting behaviors. By amplifying intrinsic motivation, readiness for transformation, active involvement, perseverance, and commitment to therapeutic plans, motivational interviewing fortifies constructive conduct (Wood, Mack, & Turner, 2020). Furthermore, it addresses the motivational dilemmas that have long perplexed healthcare practitioners, underscoring the significance of nurturing change motivation as a vital facet of the therapist's repertoire (Villarosa-Hurlocker, O'Sickey, Houck, & Moyers, 2019).

This investigation also reveals that participants engaged in group-based motivational interviewing exhibited a heightened dedication to medical interventions compared to their counterparts in the control group. In summation, motivational interviewing emerges as a critical tool due to its capacity to mitigate resistance, amplify internal motivators, augment capabilities, and enhance clinical outcomes

within the oncological domain. It bolsters participation rates and the efficacy of subsequent therapeutic modalities.

A potential limitation of the present study was the inability to blind participants given the nature of the intervention. Additional longitudinal follow-up on sustained adherence effects over time would also strengthen the study conclusions. Nonetheless, the results provide solid evidence that integrating motivational interviewing techniques into clinical practice could improve prostate cancer outcomes in Iraq through enhanced medication adherence. Oncology providers globally should consider implementing and evaluating motivational interviewing approaches to address the widespread issue of suboptimal adherence among cancer patients.

Conclusion

This randomized controlled trial in Iraq shows that motivational interviewing can significantly improve medication adherence among prostate cancer patients. Despite being a relatively unexplored method in this context, the study points to its potential in addressing non-adherence issues. The results encourage global oncology providers to include motivational interviewing in routine care for improved outcomes. The study's limitations include lack of participant blinding and long-term follow-up. Further research is needed to explore optimal implementation strategies, cost-effectiveness, and long-term impact.

Conflict of Interests

Authors have no conflict of interests.

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