

Effect of Coffee Consumption on the Incidence of Post Dural Puncture Headache among Patients Receiving Spinal Anesthesia

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Received December 15, 2018; Revised January 29, 2019; Accepted March 06, 2019

Abstract Spinal anesthesia provides excellent outcome for surgeries below the umbilicus like varicose veins surgery. Unfortunately, spinal anesthesia has complications such as Post Dural Puncture Headache (PDPH). Conservative treatments of PDPH include vasoconstrictors such as caffeine that found in coffee. The nurse observes patients for post spinal anesthesia complications especially Post Dural Puncture Headache (PDPH) and gives appropriate nursing interventions. **Design:** Quasi-experimental research design was used in this study. **Aim:** to determine effect of coffee consumption on the incidence of Post Dural Puncture Headache among patients receiving spinal anesthesia. **Hypothesis of the study:** Postoperative patients who consume coffee exhibit less incidence of Post Dural Puncture Headache than who don't consume it. **Setting:** The study was carried out in Main University Hospital, Alexandria, Egypt. **Subjects:** The sample of the study consisted of a convenience sample of 60 postoperative patients (had varicose veins surgery) received spinal anesthesia. They were divided randomly into 2 equal groups, control and study (coffee) groups. **Tool:** Postoperative Headache Assessment Sheet was used in order to collect data. It included four parts: Part I: Bio-socio demographic data, Part II: Headache diagnosis, Part III: Headache assessment items, and Part IV: Assessment of needing for analgesics. **Results:** The chief result in this study was that the incidence of PDPH is less in coffee group than in the control group with statistical significant differences between both groups ($P = (0.001^*, 0.020^*, 0.020^*, 0.038^*)$) after 4 hours, first, second, and third days, respectively. **Conclusion:** The study hypothesis was accepted as incidence of Post Dural Puncture Headache is decreased in postoperative patients who consumed coffee than in those who don't consume it. **Recommendation:** Replicate this study among different samples (age, sex, diagnosis, type of operation).

Keywords: coffee, headache, spinal anesthesia

Cite This Article: Eman Fathy Amr Mohammed Aly, and Yasmin Fathy Mohammed Abed Elazeem, "Effect of Coffee Consumption on the Incidence of Post Dural Puncture Headache among Patients Receiving Spinal Anesthesia." *American Journal of Nursing Research*, vol. 7, no. 3 (2019): 248-255. doi: 10.12691/ajnr-7-3-3.

1. Introduction

Spinal anesthesia provides excellent outcome for surgeries below the umbilicus like varicose veins surgery [1]. Spinal anesthesia is a simple, cost effective and efficient technique that provides complete sensory and motor block, as well as postoperative analgesia with a high success rate [2]. However Spinal anesthesia has some complications as hemodynamic complications (hypotension), bradycardia and Post Dural Puncture Headache (PDPH) [3].

Post Dural Puncture Headache is usually bifrontal and occipital and is aggravated by head movement, upright posture and by straining. Nausea and vomiting are common symptoms accompanied with PDPH which may first be experienced several hours to days after the dural puncture. Its incidences of approximately 15%–20% have been described in recent publications [4]. The exact

mechanism of occurrence remains unclear. The most accepted mechanism of PDPH is cerebrospinal fluid (CSF) leakage that causing traction on cranial nerves and other pain sensitive structures. Also, the compensatory cerebral vasodilatation due to loss of CSF. Dehydration, fasting, and possibly associated hypoglycemia, deprivation from intake of caffeine, anxiety, and immobilization leading to muscle tension could explain the occurrence of PDPH [5].

The incidence of PDPH increase with the presence of predisposing factors as young age, previous history, female sex, pregnancy, patient with low body mass index (BMI), and patient with high stress level during procedure [6-10]. In addition to operation factors as needle size, needle tip shape, bevel orientation to the Dural fibers, number of lumbar puncture attempts, midline versus lateral lumbar puncture approach, type of local anesthetic solution, and clinical experience of the operator. [8]

Preventive strategies of PDPH are developed based on how to reduce CSF leakage by currently available

methods including small size pencil point spinal needle, parallel bevel orientation, liquid use for the loss of resistance in epidural puncture, and prophylactic epidural blood patch [9,10]. Conservative treatment of PDPH consists of psychological support before surgery, bed rest, and abdominal binders as well as oral or intravenous fluid replacement as prescribed. Most of these activities are mainly nurses' role. Nurses play an important function in providing post-operative care and observing patient for post spinal anesthesia complications especially PDPH. Pharmacological therapy includes symptomatic analgesics, drugs that increase CSF production. Paracetamol or non-steroidal anti-inflammatory drugs are used as first step treatment. Vasoconstrictors such as caffeine have been used as well [11].

Coffee is known to be among the most commonly used drink in the world [12]. Coffee used to increase individuals' attention and wakefulness, decrease feeling of fatigue and improving their physical performance [13]. Beside its general use, coffee has medical effects as a protective agents for cardiovascular system, stroke, Parkinson's disease, Alzheimer's disease, liver disease, and recently as an antifibrotic agent [14,15]. Coffee has the ability to control and reduce occurrence of headache after spinal anesthesia. It produces cerebral vasoconstriction. Its enteral absorption is quick with a peak level within 30 minute. The dose recommended for PDPH is 300- 500 mg of oral or I.V. caffeine daily. One cup of coffee contains about 50-100 mg of caffeine [16].

Coffee consumption is safe if used in moderate amount and not excised daily recommended dose (around 5 cups of coffee). Unpleasant symptoms include restlessness, anxiety and increased blood pressure were found to be related to heavy coffee consumption. Nursing instructions about safe amount of coffee consumption is necessity [17].

1.1. Significance of the Study

The study highlights the efficacy of coffee in reducing Post Dural Puncture Headache. Such information would encourage using coffee postoperatively. Ultimately patients will less suffer from Post Dural Puncture Headache.

2. Aim of the Study

To determine effect of coffee consumption on the incidence of Post Dural Puncture Headache among patients receiving spinal anesthesia.

2.1. Hypothesis of the Study

Postoperative patients who consume coffee exhibit less incidence of Post Dural Puncture Headache than who don't consume it.

3. Materials and Method

3.1. Materials

3.1.1. Study Design

Quasi-experimental research design was used in this study.

3.1.2. Setting

This study was carried out in Main University Hospital, Alexandria, Egypt.

3.1.3. Subjects

A convenience sample of 60 patients was randomly divided into 2 equal groups, 30 patients in each.

- **Control group:** 30 patients received hospital routine care (bed rest with resting head).
- **Study (Coffee) group:** 30 patients received coffee beside hospital routine care. Patients were assigned according to the following criteria:

3.1.4. Inclusion Criteria

- Adult patients aged from 21 to 60 years.
- Patients accept participation in the study
- Patients not on anti-coagulant therapy
- Patients without hypertension
- Patients without psychiatric disorder
- Patients without chronic headache
- Patients not consume more than 3 cups of coffee per day on usual

3.1.5. Tools of the Study

One tool was used for data collection: Postoperative Headache Assessment Sheet.

This tool was developed by the researchers after reviewing current related literatures [8-11] to assess headache post operatively. It included four parts:

Part I: - Bio-sociodemographic data: It was used to record data about the following items: Personal data as: age, marital status, address, occupation, level of education, etc. Medical data as: intra-operative monitoring for e.g. blood pressure, pulse and O₂saturation.

Part II: - Headache diagnosis: This part aimed to rule out others causes of headache to confirm diagnosis of Post Dural Puncture Headache (PDPH). It included items such as blood pressure reading, blood glucose level, and signs of dehydration.

Part III: - Headache assessment items: This part was included to assess the following items of headache; occurrence, character, duration, aggravating factors, alleviating factors, degree of pain using visual analogue scale, and finally effect of pain upon activities of daily living e.g. sleep, appetite, concentration and interaction with others.

Part IV: - Assessment of needing for analgesics. It was included to record patients need to analgesic

3.2. Method

1. Written approval to carry out the study was obtained from the director of Main University Hospital after declaring the aim of the study.
2. Postoperative Headache Assessment Sheet was developed by the researchers after review of the relevant literature.
3. The developed tool was revised by five experts in the related field three professors from Medical Surgical Nursing; and two professors from Anesthesia Department, Alexandria University to ascertain its content validity and clarity of the items.

4. Reliability of the developed tool was estimated by correlation coefficient (0.70).
5. Informed consent was taken from each participant after explanation of the purpose of the study. Confidentiality and privacy was assumed to each patient.
6. A pilot study was conducted on six patients to test feasibility and applicability of the developed tool. The necessary modifications were done.
7. A convenience sample of 60 adult patients who fulfilled the inclusion criteria were assigned randomly and equally divided into two groups.
 - Control group: comprised of 30 patients they were received hospital routine care (bed rest with resting head)
 - Study (Coffee) group: comprised of 30 patients they were received coffee beside hospital routine care (3cups per day for one week). The type of coffee was fixed and not included any additives.
8. Data was collected from the identified subjects using the developed Tool: Postoperative Headache Assessment Sheet.
 - Within 24 hours of admission the researchers built a therapeutic relationship with the patients in order to get co-operation after explaining the purpose of the study.
 - The instruction about hospital routine care (bed rest with resting head) and how to use visual analogue scale in headache assessment was given to patients in both groups where the scale consists of an unmarked 10 cm line, with 0 representing no headache and 10 representing the worst headache.
 - The instruction about coffee consumption was given to patients in coffee group.
9. Surgeon and anesthesiologist were fixed in all operations and also needle and technique used in spinal anesthesia.
10. Intra-operative monitoring was done to evaluate patient condition for pulse, blood pressure and O₂ saturation.
11. Headache diagnosis was done to exclude other causes of headache and to confirm diagnosis of Post Dural Puncture Headache PDPH.
12. Daily headache assessment was done for patients in both groups for one week. Comparison was done between two groups in order to determine the effect of coffee consumption versus routine care on incidence of Post Dural Puncture Headache (PDPH).
13. Data collection extended from September 2017 to June 2018.

3.2.1. Ethical Considerations

- Written informed consent was obtained from patients after explanation of the aim of the study.
- Privacy and confidentiality are assured to the study subjects.
- Patients were informed that their participation is voluntary and they have the right to be withdrawn from the study with a full respect.

3.2.2. Statistical Analysis: [18]

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. Qualitative data

were described using number and percent. Quantitative data were described using range (minimum and maximum), mean, and standard deviation. Significance of the obtained results was judged at the 5% level.

The used tests were

1- Chi-square test: For categorical variables, to compare between different groups.

2- Fisher's Exact or Monte Carlo correction: Correction for chi-square when more than 20% of the cells have expected count less than 5.

3-Friedman test: For abnormally distributed quantitative variables, to compare between more than two periods or stage.

4. Results

According to [Table 1](#), nearly half (53.3%) of the study (Coffee) group patients aged from 30<40 years while 50.0% of the control group patients aged from 40<50 years. Females represented the highest percentage of both the study and the control groups (73.3% and 76.7%) respectively. About two thirds (60% and 73.3%) of both study (Coffee) and control groups respectively were married. Also, the highest percentage (36.7%) of study (Coffee) group patients had preparatory education while, in control group each primary and secondary level of education represented 30%. Manual employed patients represented the highest percentage (56.7% and 53.3%) in both study (Coffee) and control groups respectively. Overweight represented the highest percentage (30% and 40%) of patients in both study (Coffee) and control groups respectively. Non-smokers represented the highest percentage of both the study and the control groups (76.6% and 83.3%) respectively. No statistical significant differences were found between both groups as regards to all patients' personal data.

[Figure 1](#) & [Figure 2](#) show intra-operative monitoring data; all patients in both study and the control groups had normal blood pressure reading, nearly median score in O₂ saturation and pulse count.

No statistical significant differences were found between both groups as regards to intra-operative monitoring data.

[Table 2](#) illustrates the absence of any risk factors of headache as abnormal blood pressure, blood glucose level or signs of dehydration in patients of both groups.

[Table 3](#) denotes that the patients in the study(Coffee) group showed lower percentages of headache occurrence after 4 hours, first, second, and third days presented as(0.0%, 13.3%,13.3%,6.7%) respectively compared to patients in the control group who presented higher percentages of headache occurrence (40%,40%, 40%, 26.7%)respectively.

There were statistical significant differences between both groups (P= (0.001*, 0.020*, 0.020*, and p=0.038*) respectively.

The findings showed that all of the patients who experienced pain in both the study (Coffee) and control groups had dull intermittent headache. The table showed that during first, second, and third days of assessment the majority of patients in the study (Coffee) group (75%, 75% and 100%) and control group (58.3%, 58.3% and 62.5%) respectively had standing as aggravating factor.

Table 1. Personal Data of the study Subjects

Personal data	Coffee(n = 30)		Control(n =30)		χ^2	p
	No.	%	No.	%		
Age in years						
20 -	2	6.7	3	10.0	3.588	MCp=0.306
30 -	16	53.3	10	33.3		
40 -	12	40.0	15	50.0		
50 -	0	0.0	2	6.7		
Sex						
Male	8	26.7	7	23.3	0.0889	0.765594
Female	22	73.3	23	76.7		
Marital status						
Single	12	40.0	8	26.7	1.200	0.273
Married	18	60.0	22	73.3		
Level of education						
Illiterate	2	6.7	3	10.0	2.656	MCp=0.665
Primary education	6	20.0	9	30.0		
Preparatory education	11	36.7	7	23.3		
Secondary education	7	23.3	9	30.0		
University	4	13.3	2	6.7		
Occupation						
Employment					0.964	0.618
Manual	17	56.7	16	53.3		
Professional	6	20.0	9	30.0		
Not employment	7	23.3	5	16.7		
Body mass index						
Under weight	7	23.3	5	16.7	$\chi^2=1.830$	0.608
Normal body weight	7	23.3	9	30.0		
Over weight	9	30.0	12	40.0		
Obese	7	23.3	4	13.3		
Smoking						
Nonsmoker	23	76.6	25	83.3	$\chi^2=0.417$	0.518
Smoker	7	23.4	5	16.4		

χ^2 : Chi square test
 p: p value for comparing between the two group
 MC: Monte Carlo.

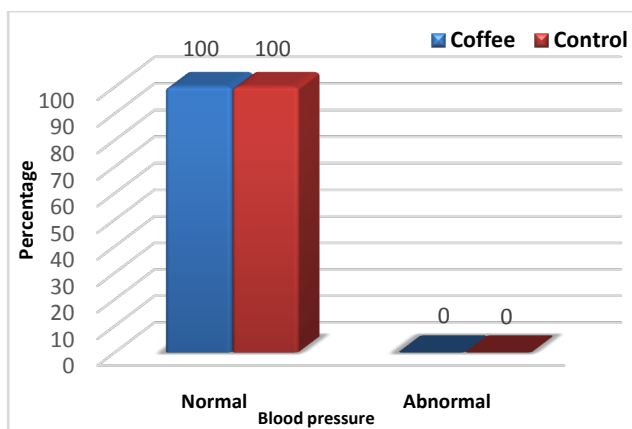


Figure 1. Intra-operative Monitoring Data of the Study Subjects (blood pressure)

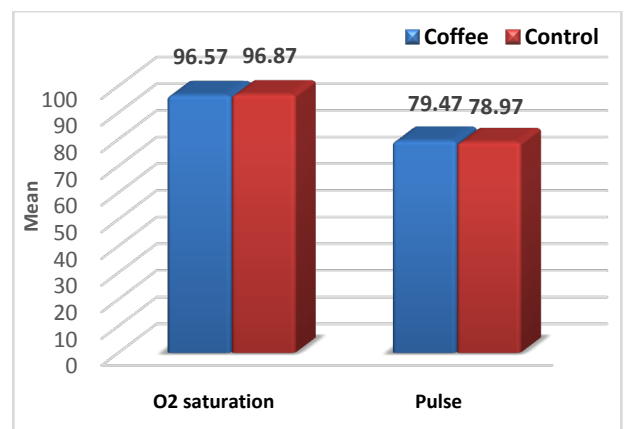


Figure 2. Intra-operative Monitoring Data of the Study Subjects (O₂ saturation, Pulse)

Table 2. Risk Factors of Headache in Both Study and Control Groups

		During hospitalization		After 4 hours		Postoperative follow up days											
		Immediate		No.	%	Day1		Day2		Day3		Day4		Day5		Day6	
		No.	%			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Blood pressure reading	Study group																
	Normal <120/80 mm Hg	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0
	Stage 1 = 140 – 159/90 – 99 mmHg	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Stage 2=160-179 /100-109 mm Hg	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Hypertensive Crisis = ≥180/110 mm Hg	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Control group																
	Normal <120/80 mm Hg	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0
	Stage 1 = 140 – 159/90 – 99 mmHg	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Stage 2=160-179 /100-109 mm Hg	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
Hypertensive Crisis = ≥180/110 mm Hg	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
Fasting blood glucose sugar	Study group																
	Normal70-110 mg/dL	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0
	Hypoglycemia< 70 mg/dL	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Hyperglycemia> 110 mg/dL	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Control group																
	Normal70-110 mg/dL	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0
Hypoglycemia< 70 mg/dL	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
Hyperglycemia> 110 mg/dL	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
Signs of dehydration	Study group																
	Present	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Not present	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0
	Control group																
	Present	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Not present	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0	30	100.0

The same table revealed that, during first, second, third and fourth days of assessment, all patients in coffee group (100%) had resting and sleeping as **alleviating factor** compared to the highest percentage (75%,75%,62.5% and 80.0%) of patients in control group respectively.

Regarding **degree of pain**, after 4 hours and fourth day postoperatively no patients in the study (Coffee) group experience any pain compared with (66.7% and 100.0%) of patients in the control group experience moderate and mild degree of pain respectively. For effect of headache

on **activity of daily living**: during first, second and third postoperative days the highest percentages (75%,75% and100 %)respectively of patients in study(Coffee)group had no effect on activity of daily living compared to (66.9 %, 66.9 %, 75%) respectively of patients in control group.

No statistical significant differences between patients in both groups in relation to headache assessment items: character, duration, aggravating factor, alleviating factor, degree of pain and effect on activity of daily living.

Table 3. Headache Assessment Items among Both Groups' Overtimes

		During hospitalization		After 4 hours		Postoperative follow up days											
		Immediate		No.	%	Day1		Day2		Day3		Day4		Day5		Day6	
		No.	%			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Occurrence	Coffee																
	Not occur	30	100.0	30	100.0	26	86.7	26	86.7	28	93.3	30	100.0	30	100.0	30	100.0
	Occur	0	0.0	0	0.0	4	13.3	4	13.3	2	6.7	0	0.0	0	0.0	0	0.0
	Control																
	Not occur	30	100.0	18	60.0	18	60.0	18	60.0	22	73.3	25	83.3	30	100.0	30	100.0
	Occur	0	0.0	12	40.0	12	40.0	12	40.0	8	26.7	5	16.7	0	0.0	0	0.0
$\chi^2(p)$	-		15.00*(<0.001*)		5.455*(0.020*)		5.455*(0.020*)		4.320*(0.038*)		5.455(FE _p =0.052)		-		-		

	During hospitalization		After 4 hours		Postoperative follow up days												
	Immediate				Day1		Day2		Day3		Day4		Day5		Day6		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Character	Coffee	(n = 0)		(n = 0)		(n = 4)		(n = 4)		(n = 2)		(n = 0)		(n = 0)		(n = 0)	
	Dull	-	-	-	-	3	75.0	3	75.0	2	100.0	-	-	-	-	-	-
	Sawing	-	-	-	-	1	25.0	1	25.0	0	0.0	-	-	-	-	-	-
	Control	(n = 0)		(n = 12)		(n = 12)		(n = 12)		(n = 8)		(n = 5)		(n = 0)		(n = 0)	
	Dull	-	-	12	100.0	12	100.0	12	100.0	8	100.0	5	100.0	-	-	-	-
Sawing	-	-	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	-	-	-	-	
$\chi^2(p)$			-		3.200 ^(FE) (p=0.250)		3.200 ^(FE) (p=0.250)		10.00 ^(FE) (p=0.022*)		-		-		-		
Duration	Coffee	(n = 0)		(n = 0)		(n = 4)		(n = 4)		(n = 2)		(n = 0)		(n = 0)		(n = 0)	
	Continuous	-	-	-	-	0	0.0	0	0.0	0	0.0	-	-	-	-	-	-
	Intermittent	-	-	-	-	4	100.0	4	100.0	2	100.0	-	-	-	-	-	-
	Control	(n = 0)		(n = 12)		(n = 12)		(n = 12)		(n = 8)		(n = 5)		(n = 0)		(n = 0)	
	Continuous	-	-	1	8.3	0	0.0	0	0.0	0	0.0	0	0.0	-	-	-	-
Intermittent	-	-	11	91.7	12	100.0	12	100.0	8	100.0	5	100.0	-	-	-	-	
$\chi^2(p)$			-		-		-		-		-		-		-		
Aggravating factor	Coffee	(n = 0)		(n = 0)		(n = 4)		(n = 4)		(n = 2)		(n = 0)		(n = 0)		(n = 0)	
	Sitting	-	-	-	-	1	25.0	1	25.0	0	0.0	-	-	-	-	-	-
	Standing	-	-	-	-	3	75.0	3	75.0	2	100.0	-	-	-	-	-	-
	Talking	-	-	-	-	0	0.0	0	0.0	0	0.0	-	-	-	-	-	-
	Control	(n = 0)		(n = 12)		(n = 12)		(n = 12)		(n = 8)		(n = 5)		(n = 0)		(n = 0)	
Sitting	-	-	3	25.0	3	25.0	3	25.0	2	25.0	1	20.0	-	-	-	-	
Standing	-	-	7	58.3	7	58.3	7	58.3	5	62.5	3	60.0	-	-	-	-	
Talking	-	-	2	16.7	2	16.7	2	16.7	1	12.5	1	20.0	-	-	-	-	
$\chi^2(p)$			-		0.728 ^(MC) (p=1.000)		0.728 ^(MC) (p=1.000)		1.177 ^(MC) (p=1.000)		-		-		-		
Alleviate factor	Coffee	(n = 0)		(n = 0)		(n = 4)		(n = 4)		(n = 2)		(n = 0)		(n = 0)		(n = 0)	
	Resting and sleeping	-	-	-	-	4	100.0	4	100.0	2	100.0	-	-	-	-	-	-
	Divertional activities	-	-	-	-	0	0.0	0	0.0	0	0.0	-	-	-	-	-	-
	Control	(n = 0)		(n = 12)		(n = 12)		(n = 12)		(n = 8)		(n = 5)		(n = 0)		(n = 0)	
	Resting and sleeping	-	-	9	75.0	9	75.0	9	75.0	5	62.5	4	80.0	-	-	-	-
Divertional activities	-	-	3	25.0	3	25.0	3	25.0	3	37.5	1	20.0	-	-	-	-	
$\chi^2(p)$			-		1.231 ^(FE) (p=0.529)		1.231 ^(FE) (p=0.529)		1.071 ^(FE) (p=1.000)		-		-		-		
Degree of pain	Coffee	(n = 0)		(n = 0)		(n = 4)		(n = 4)		(n = 2)		(n = 0)		(n = 0)		(n = 0)	
	Mild pain	-	-	-	-	2	50.0	3	75.0	2	100.0	-	-	-	-	-	-
	Moderate pain	-	-	-	-	2	50.0	1	25.0	0	0.0	-	-	-	-	-	-
	Control	(n = 0)		(n = 12)		(n = 12)		(n = 12)		(n = 8)		(n = 5)		(n = 0)		(n = 0)	
	Mild pain	-	-	3	33.3	3	33.3	6	66.7	7	87.5	5	100.0	-	-	-	-
Moderate pain	-	-	9	66.7	9	66.7	6	33.3	1	12.5	0	0.0	-	-	-	-	
$\chi^2(p)$			-		0.097 ^(FE) (p=1.000)		0.097 ^(FE) (p=1.000)		0.278 ^(FE) (p=1.000)		-		-		-		
Effect on activity of daily living	Coffee	(n = 0)		(n = 0)		(n = 4)		(n = 4)		(n = 2)		(n = 0)		(n = 0)		(n = 0)	
	Not affect	-	-	-	-	3	75.0	3	75.0	2	100.0	-	-	-	-	-	-
	Sleep	-	-	-	-	0	0.0	0	0.0	0	0.0	-	-	-	-	-	-
	Interaction with others	-	-	-	-	1	25.0	1	25.0	0	0.0	-	-	-	-	-	-
	Control	(n = 0)		(n = 12)		(n = 12)		(n = 12)		(n = 8)		(n = 5)		(n = 0)		(n = 0)	
Not affect	-	-	8	66.7	8	66.7	8	66.7	6	75.0	5	100.0	-	-	-	-	
Sleep	-	-	2	16.7	2	16.7	2	16.7	1	12.5	0	0.0	-	-	-	-	
Interaction with others	-	-	2	16.7	2	16.7	2	16.7	1	12.5	0	0.0	-	-	-	-	
$\chi^2(p)$			-		0.859 ^(MC) (p=1.000)		0.859 ^(MC) (p=1.000)		1.161 ^(MC) (p=1.000)		-		-		-		

χ^2 : Chi square test MC: Monte Carlo FE: Fisher Exact
 p: p value for comparing between the two groups in each period, *: Statistically significant at p ≤ 0.0.

Figure 3 exhibits that only 13.3% of patients in study (Coffee) group needed analgesic compared to 40% of patients in control group. Statistical significant difference as existed between the study (Coffee) and control groups where ($X^2= 5.455 P= (0.020)$).

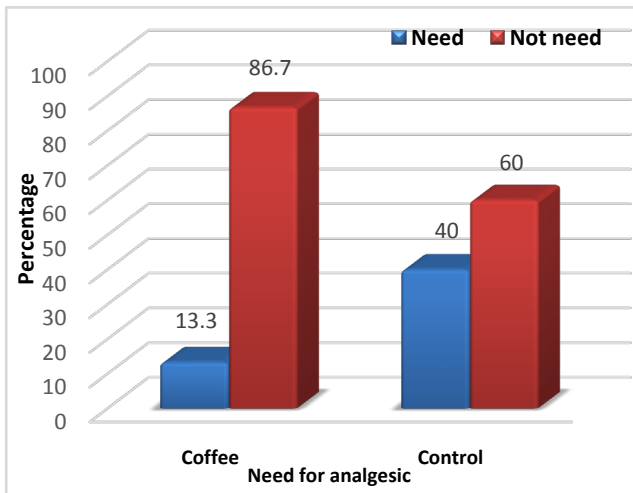


Figure 3. Comparison between the Study and Control Groups According to Need for Analgesic

5. Discussion

Post Dural Puncture Headache (PDPH) is a complication after spinal anesthesia. Conservative treatment of PDPH consists of psychological support before surgery, bed rest, and abdominal binders as well as vasoconstrictors such as caffeine that found in coffee [4,11]. Therefore, the current study was conducted on patients receiving spinal anesthesia, to investigate effect of coffee consumption on the incidence of Post Dural Puncture Headache.

The findings of present study illustrate that there were no statistical significant differences between study (Coffee) and control groups regarding patients' demographic and clinical data; age, marital status, level of education, occupation, body mass index, smoking and intra-operative monitoring; this is in line with Ragab [16] who study effect of Caffeine, for prevention of Post Dural Puncture Headache in young adult patients in Egypt.

The chief result in this research was that the decreasing in the incidence of PDPH is more in study (Coffee) group than in the control group. This is in agreement with Ragab [16] and Camann et al. [19] who asserted that oral caffeine could be considered for headache relief in PDPH with minimal side effects. This finding also is supported by Eshghizadeh et al. [20] who performed study on the women referring to Razi Hospital, in Torbat Heidarieh and reported that consumption of coffee in patients who have undergone cesarean section with spinal anesthesia can prevent PDPH and reduce the severity of headache

From the researchers' point of view, this finding could be justified that caffeine has the ability to cross the blood-brain barrier so; it increases cerebral arterial vasoconstriction, and causes a decrease in cerebral blood inflow and brain blood volume. Furthermore, caffeine excesses the cerebrospinal fluid production by stimulating sodium-potassium pumps [21,22] so; it compensates CSF leakage during spinal anesthesia, where decreasing CSF

produces a downsizing intracranial pressure leading to headache sensation. On the other hand, this finding is in contrast with Halker et al. [23] who concluded that caffeine lacks a strong and compelling pharmacological basis as a treatment to prevent or relieve PDPH.

The results revealed that control group had early onset of headache occurrence. This result was in line with Ali [24] who studied effect of pre and post nursing intervention on the occurrence of tension headache among surgical patients undergoing spinal anesthesia in Egypt and confirmed that there was a true reduction in the duration of tension headache in the intervention group of the study in addition to, significantly lower intensity scores among patients in the study group as compared to those in the control group.

The present study verified that patients in control group had moderate degree of pain compared to mild degree of pain in study (Coffee) group. This result was supported by Kassa et al [25] who studied Post Dural Puncture Headache and associated factors after spinal anesthesia among patients in University of Gondar Referral and Teaching Hospital, Gondar, North West Ethiopia reported that the majority of patients in their study have experienced mild (42.2%) and moderate (31.1%) PDPH pain.

The majority of patients in both groups had standing as aggravating factor and resting and sleeping as alleviating factors for occurrence of PDPH. In this context Turnbull [26] mentioned that PDPH is increased by movement of the head, and adoption of the upright posture, and relieved by lying down. This result could be justified that during sitting or standing up, the pressure around brain is reduced even more. Therefore, sitting or standing often makes the headache worse.

The highest percentages of patients in study (Coffee) group had no effect on activity of daily living compared to patients in control group. This result may be due to the fact that coffee increases energy, alertness, ability to concentrate and decreases fatigue.

The results exhibits statistical significant difference between the study (coffee) and control groups as regard needing for analgesic. Only four patients in the study (coffee) group needed analgesic compared with twelve patients in the control group. This finding is with harmony with Ragab [16] who found that analgesic demand was significantly lower in group C (received caffeine) than in group S (received saline) for Post Dural Puncture Headache in young adult patients. This finding came in accordance with Lin [21] who confirmed that caffeine administration is a noninvasive and safe option that may prevent the use of invasive analgesic methods such as epidural blood patching, or epidural injection of NaCl 0.9%. This result was point to success of the coffee consumption on reducing severity of Post Dural Puncture Headache among study (Coffee) group.

6. Conclusion

6.1. Findings of the Present Study Concluded That

The study hypothesis was accepted as incidence of Post Dural Puncture Headache is decreased in postoperative

patients who consumed coffee than in those who don't consume it. The results of current research can aid clinicians to use coffee as an effective, safe, noninvasive treatment for prevention of PDPH.

7. Recommendations

Replicate this study among different samples (age, sex, diagnosis, type of operation).

Acknowledgments

Researchers wish to offer their gratitude and appreciation to all those who have assisted in this research.

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