

A Descriptive Study on Prevalence and Risk Factors of Low Back Pain and its Impact on Quality of Life Among Staff Nurses Working in Selected Hospital of District Mohali, Punjab, India

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Abstract: Study aimed to assess prevalence and risk factors of low back pain and its impact on quality of life among staff nurses working in selected hospital of district Mohali, Punjab. Quantitative research approach with descriptive research design was adopted. 250 staff nurses were selected using convenient sampling technique. Result showed that low back pain was present in 91 (36.4%) staff nurses out of 250 staff nurses. 9 (9.9%), 63 (69.2%), and 19 (20.9%) staff nurses had few, many and lot many risk factors of low back pain respectively. Moreover, 56 (61.50%), 32(35.20%) and 3 (3.30%) staff nurses had poor, good and excellent quality of life respectively. Significant association of prevalence of low back pain is found with socio-demographic variables like BMI (Kg/m²) and present area of work. There is significant association of categories of risk factors with prevalence of low back pain. There is no significant association of risk factors of low back pain with selected socio-demographic variables. No significant association is found between categories of risk factors and quality of life. There is significant association of quality of life with socio-demographic variable such as wearing heels at $p > 0.05$.

Keywords: Prevalence, Risk factors, Low back pain, Quality of life, Staff nurses.

Date of Submission: 18-09-2019

Date of Acceptance: 05-10-2019

I. Introduction

Low back pain(LBP), the most prevalent musculoskeletal disorders, represents a complex and global problem for certain occupational groups, such as nursing personnel.¹ According to NCBI (National Center for Biotechnology Information) Low back pain is defined as “pain and discomfort, localized below the costal margin and above the inferior gluteal folds, with or without leg pain”.² The study of prevalence of low back pain in nurses conducted by Dr. Ms.Sukhada Ghodey in 2017 showed that 98% of nurses have low back pain of varying intensities.³ 74% of the staff nurses had difficulty in their personal care, 90% experienced pain during lifting, while 86% experienced problem in walking, 92% had difficulty in sitting, 96% had difficulty during standing and 82% faced problems during sleeping.³

Staff nurses routinely perform various activities in hospitals that require lifting heavy loads, lifting patients, working in awkward postures, and transferring patients out of bed and from the floor. These work tasks put nurses at high risk for acute and cumulative work related musculoskeletal disorders (WMSD).⁴ Risk factors for low back pain are underweight, unsafe sex, high blood pressure, tobacco and alcohol consumption, and unsafe water, sanitation and hygiene.⁵ Other multiple risk factors including gender, lifestyle, and psychological profile, physical demands of the workplace, social support, and pain perception also enhances the occurrence of low back pain.⁶

Quality of life (QOL) is an overarching term for the quality of the various domains in life.⁷ LBP has double burden on the quality of life as well as on health expenditure.⁸ In low- and middle-income countries where most of the expenditure on health is out of pocket by the patients with limited access to specialty care, this problem poses a huge burden at the household level.⁹

II. Material and Methods

2.1 Study Design: Descriptive study.

2.2 Study Location: Private hospital in Mohali, Punjab.

2.3 Sample Size: 250 staff nurses.

2.4 Sampling: Convenient sampling technique.

2.5 Inclusion criteria: The staff nurses who were:-

- available at the time of data collection.
- willing to participate in the study and gave written informed consent.
- having low back pain since more than 2 months.

2.6 Exclusion Criteria: The staff nurses who were:-

- having low back due to menstrual cycle.
- pregnant during data collection period.

2.7 Methodology: Tool which has been used for data collection consists of four sections:

Section A: Consists of 20 socio-demographic variables.

Section B: Semi-Structured Questionnaire consists of 7 items to assess prevalence regarding low back pain.

Section C: Checklist consists of 30 items which are divided into four factors namely personal factors, health-related factors, psychological factors and occupational factors to assess risk factors of low back pain.

Section D: Modified WHOQOL-BREF has been used which consists of 26 items to assess the impact of low back pain on quality of life.

2.8 Statistical analysis:

Data was analysed by using SPSS version 20. Chi square has been used for testing relationships between prevalence of low back pain with selected socio-demographic variables, categories of risk factors with prevalence of low back pain, risk factors of low back pain with selected socio-demographic variables, categories of risk factors with quality of life and quality of life of low back pain with selected socio-demographic variables.

III. Result

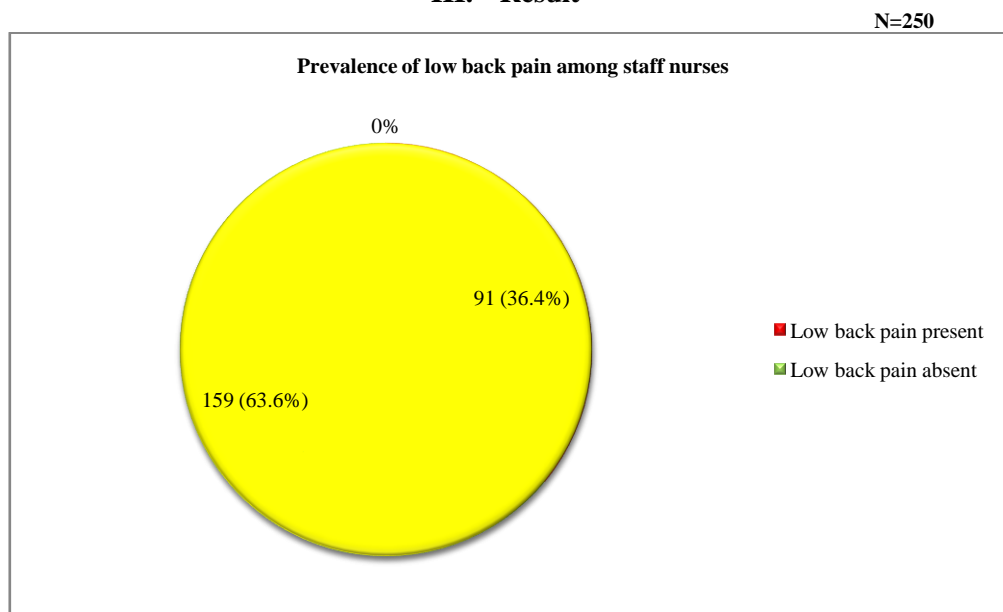


Fig.1 Pie diagram showing percentage distribution of prevalence of low back pain among staff nurses (Chronic pain in lower back region persisting for longer than 12 weeks, or after the period of healing or recurring back pain that intermittently affects an individual over a long period of time)

Table 1: Frequency and percentage distribution of characteristics of low back pain prevalent among staff nurses
N=91

Sr. No.	Statements	Frequency (f)	Percentage (%)
1.	Months/years have passed since onset of low back pain		
	<1 year	45	49.5%
	1-3 years	45	49.5%
	>3 years	1	1.1%
2.	Frequency of Low back pain		
	Daily	19	20.9%
	Weekly	45	49.5%
	Monthly	27	29.7%
3.	Location of Low back pain		

	Lumbar region	24	26.4%
	Sacral region	56	61.5%
	Lumbosacral region	11	12.1%
4.	Characteristic of Low back pain		
	Localised pain	19	20.9%
	Pain with numbness	39	42.9%
	Pain radiating to thigh	24	26.4%
	Pain radiating to lower legs	7	7.7%
	Sacroiliac region	2	2.2%
5.	Nature of Low back pain		
	Numbness and tingling	12	13.2%
	Dull aching pain	66	72.5%
	Sharp stabbing pain	8	8.8%
	Needle pricking pain	5	5.5%
	Burning pain	0	0%
	If any other	0	0%
6.	Intensity of low back pain (according to pain numerical rating scale)		
	Mild (<3)	23	25.3%
	Moderate (5-7)	67	73.6%
	Severe (8-10)	1	1.1%

Table1 49.5% staff nurses had onset of low back pain at less than 1 year ago and 49.5% had onset of low back pain at 1-3 years ago. Majority of them i.e. 49.5% had weekly frequency of low back pain. 61.5% had pain in sacral region, 42.9% had pain with numbness, 72.5% had dull aching pain and 73.6% had moderate pain (5-7 as per numerical rating scale).

Table2: Association between prevalence of low back pain with selected socio -demographic variables
N=91

Sr. No.	Socio-demographic variables	Low back pain		χ^2 , df, p-value
		Present	Absent	
1.	Age (in years)			1.725,1, 0.189 ^{NS}
	21-25	46	94	
	26-30	45	65	
2.	Weight (in Kg)			2.164,2, 0.339 ^{NS}
	<50	27	54	
	51-100	63	105	
	>100	1	0	
3.	Height (in cm)			5.482,3, 0.140 ^{NS}
	141-150	9	24	
	151-160	64	88	
	161-170	16	41	
	171-180	2	6	
4.	BMI (Kg/m²)			14.249,4, 0.007*
	Less than 18.5 (Underweight)	9	11	
	18.5-24.9 (Normal)	65	139	
	25-29.9 (Overweight)	17	9	
5.	Marital status			0.903,1, 0.342 ^{NS}
	Married	5	14	
	Unmarried	86	145	
	Divorced	0	0	
	Widow/widower	0	0	
	Separated	0	0	
6.	Educational qualification			1.399,2, 0.497 ^{NS}
	G.N.M	27	52	
	Basic B.Sc. Nursing	55	85	
	Post basic Nursing	9	22	
	M.Sc. Nursing/M.Phil.	0	0	
	Ph.D. Nursing	0	0	
7.	Monthly family income (in Rupees)			5.685,3, 0.128 ^{NS}
	Upto 30,000/-	17	33	
	30,001-60,000/-	60	87	
	60,001-90,000/-	14	33	
	Above 90,000/-	0	6	
8.	Total number of children (to be filled by females)			0.809,2, 0.667 ^{NS}
	Not applicable	90	155	
	None	1	3	
	One	0	1	
	Two	0	0	
	Three	0	0	

	Four	0	0	
9.	Family history of low back pain			
	Yes	35	71	0.909,1,
	No	56	88	0.340 ^{NS}
10.	Mode of transport (most of the times)			
	Car	29	32	6.238,5, 0.284 ^{NS}
	2 wheeler	46	86	
	Standing in metro/bus	5	16	
	Sitting in metro/bus	3	11	
	Auto rickshaw	6	11	
	By foot	2	3	
11.	Duration of travel to reach workplace (in minutes)			
	<30	42	79	0.289,1, 0.591 ^{NS}
	31-60	49	80	
12.	Present area of work			
	Ward	27	65	9.489,4, 0.050 [†]
	OPD	25	42	
	ICU	30	32	
	Emergency	2	12	
	Radiology department	7	8	
13.	Previous area of work			
	Ward	17	52	8.499,4, 0.075 ^{NS}
	OPD	44	54	
	Emergency =	22	39	
	ICU	2	7	
	Radiology department	6	7	
14.	Total work experience (in years)			
	<1 year	43	86	4.144,2, 0.126 ^{NS}
	1-3 years	42	70	
	>3 years	6	3	
15.	Total working hours per week			
	31-40	22	61	5.338,2, 0.069 ^{NS}
	41-50	68	96	
	51-60	1	2	
16.	Mostly on which shift			
	Morning	39	69	1.182,2, 0.554 ^{NS}
	Evening	52	88	
	Night	0	2	
17.	Wearing heels			
	Never	21	33	0.730,2, 0.694 ^{NS}
	Occasionally	67	123	
	Daily	3	3	
18.	Food habits			
	Vegetarian	29	55	4.256,2, 0.119 ^{NS}
	Non vegetarian	61	94	
	Eggetarian	1	10	
19.	Coffee intake			
	Never	14	14	5.244,2, 0.073 ^{NS}
	Occasionally	73	143	
	Daily	4	2	

*. Significant at p<0.05NS- Non Significant at p<0.05

Table2 showsthere is a significant association of BMI (Kg/m²) and present area of work with prevalence of low back pain at p<0.05.

Table3:Criteria for categories of risk factors according to number of risk factors among staff nurses with low back pain

Categories of risk factors	Number of risk factors
Few	0-10
Many	11-20
Lot many	21-30

N=91

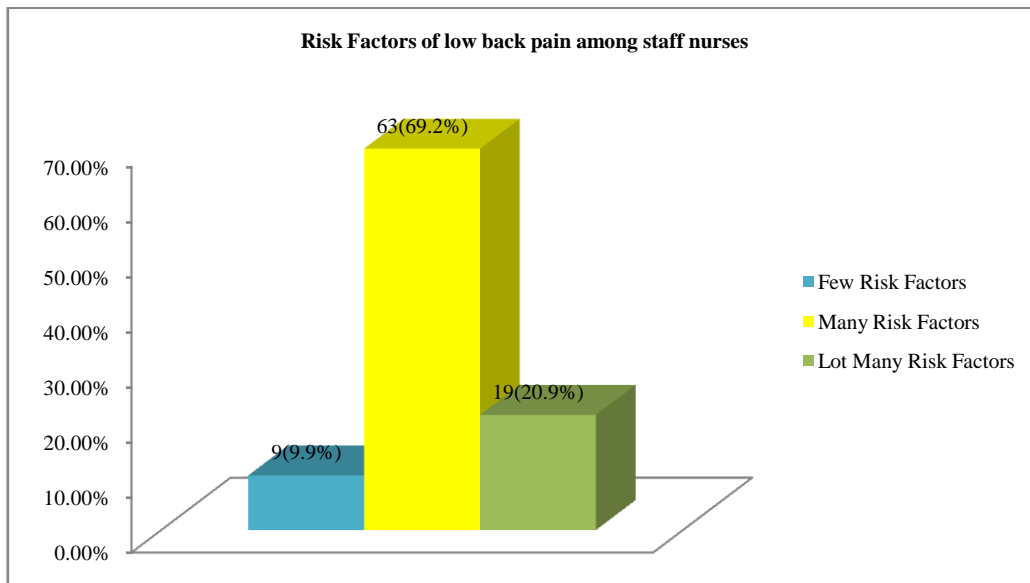


Fig. 2 Bar graph showing frequency and percentage distribution of risk factors of low back pain among staff nurses

Staff nurses with low back pain were assessed for 30 risk factors. Mean, median, and SD of risk factors among staff nurses with low back pain came out to be 17.25, 18.00 and 4.84 respectively.

Table4: Association of categories of risk factors with prevalence of low back pain

Variables		Categories of Risk factors			χ^2 , df, p-value
		Few	Many	Lot Many	
Prevalence of low back pain	Yes	9	63	19	208.967,2 <0.001*
	No	158	1	0	

*- Significant at p <0.05

Table4 shows there is a significant association of categories of risk factors with prevalence of low back pain at p<0.05.

Table5: Association between risk factors of low back pain with selected socio-demographic variables

Sr. No.	Socio-demographic variables	Frequency (f)	Risk factors			χ^2 , df, p-value
			Few f ₁ = 9	Many f ₂ =63	Lot many f ₃ =19	
1.	Age (in years)					
	21-25	46	6	29	11	1.860,2,
	26-30	45	3	34	8	0.395 ^{NS}
2.	Weight (in Kg)					
	<50	27	3	21	3	2.785,4, 0.594 ^{NS}
	51-100	63	6	41	16	
>100	1	0	1	0		
3.	Height (in cm)					
	141-150	9	1	6	2	1.347,6, 0.969 ^{NS}
	151-160	64	7	44	13	
	161-170	16	1	11	4	
171-180	2	0	2	0		
4.	BMI (Kg/m²)					
	Less than 18.5 (Underweight)	9	0	7	2	5.433,8, 0.710 ^{NS}
	18.5-24.9 (Normal)	65	8	44	13	
25-29.9 (Overweight)	17	2	12	3		
5.	Marital status					
	Married	5	0	5	0	2.351,2, 0.309 ^{NS}
	Unmarried	86	9	58	19	
	Divorced	0	0	0	0	
Widow/widower	0	0	0	0		

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	Separated	0	0	0	0	
6.	Educational qualification					
	G.N.M	27	4	20	3	5.268,4, 0.261 ^{NS}
	Basic B.Sc. Nursing	55	3	38	14	
	Post basic Nursing	9	2	5	2	
	M.Sc. Nursing/M.Phil.	0	0	0	0	
Ph.D. Nursing	0	0	0	0		
7.	Monthly family income (in Rupees)					
	Upto 30,000/-	17	2	12	3	0.956,4, 0.916 ^{NS}
	30,001-60,000/-	60	6	40	14	
	60,001-90,000/-	14	2	5	2	
Above 90,000/-	0	0	0	0		
8.	Total number of children (to be filled by females)					
	Not applicable	90	9	62	19	0.449,2, 0.799 ^{NS}
	None	1	0	1	0	
	One	0	0	0	0	
	Two	0	0	0	0	
	Three	0	0	0	0	
Four	0	0	0	0		
9.	Family history of low back pain					
	Yes	35	3	25	7	0.161,2, 0.923 ^{NS}
No	56	6	38	12		
10.	Mode of transport (most of the times)					
	Car	29	3	21	5	7.713,10, 0.657 ^{NS}
	2 wheeler	46	5	29	12	
	Standing in metro/bus	5	0	4	1	
	Sitting in metro/bus	3	1	1	1	
	Auto rickshaw	6	0	6	0	
By foot	2	0	2	0		
11.	Duration of travel to reach workplace (in minutes)					
	<30	42	6	28	8	1.723,2, 0.422 ^{NS}
31-60	49	3	35	11		
12.	Present area of work					
	Ward	27	4	15	8	6.922,8, 0.545 ^{NS}
	OPD	25	2	17	6	
	ICU	30	3	22	5	
	Emergency	2	0	2	0	
Radiology department	7	0	7	0		
13.	Previous area of work					
	Ward	17	1	13	3	4.399,8, 0.819 ^{NS}
	OPD	44	4	31	9	
	ICU	22	4	14	4	
	Emergency	2	0	1	1	
Radiology department	6	0	4	2		
14.	Total work experience (in years)					
	<1 year	43	4	31	8	1.229,4, 0.873 ^{NS}
	1-3 years	42	4	29	9	
>3 years	6	1	3	2		
15.	Total working hours per week					
	31-40	22	1	15	6	10.311,4, 0.036 ^{NS}
	41-50	68	7	48	13	
51-60	1	1	0	0		
16.	Mostly on which shift					
	Morning	39	4	27	8	0.014,2, 0.993 ^{NS}
	Evening	52	5	36	11	
Night	0	0	0	0		
17.	Wearing heels					
	Never	21	2	16	3	4.479,4, 0.345 ^{NS}
	Occasionally	67	7	46	14	
Daily	3	0	1	2		
18.	Food habits					
	Vegetarian	29	2	20	7	1.054,4, 0.902 ^{NS}
	Non vegetarian	61	7	42	12	
Eggetarian	1	0	1	0		
19.	Coffee intake					
	Never	14	1	12	1	4.530,4, 0.339 ^{NS}
	Occasionally	73	8	47	18	
Daily	4	0	4	0		

NS- Non Significant at p<0.05

Table5 shows there is no significant association of risk factors of low back pain with selected socio-demographic variables among staff nurses at $p < 0.05$

Table6:Criteria for categories of quality of life according to score.

Categories	Score
Poor	26-60
Good	61-95
Excellent	96-130

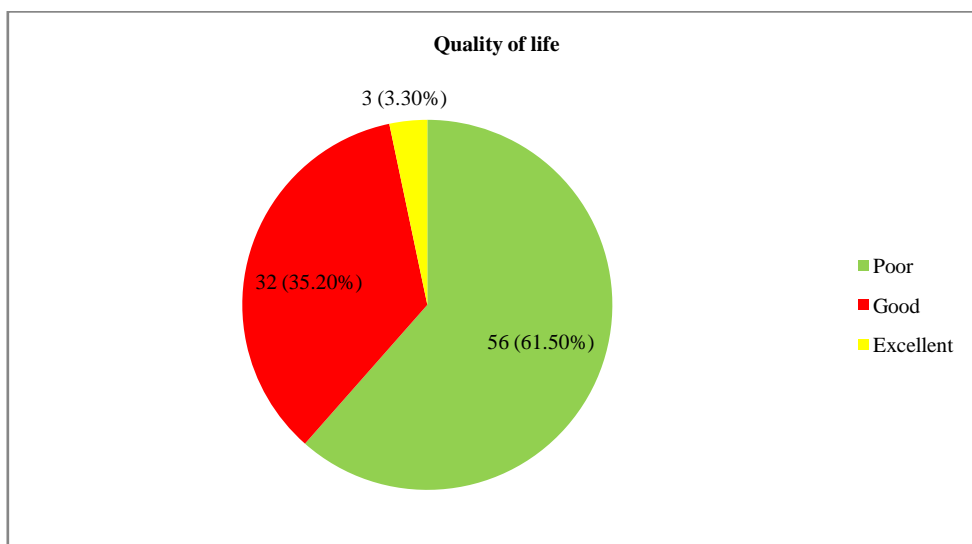


Fig. 3 Pie diagram showing frequency and percentage distribution of quality of life

Table7:Association between categories of risk factors with quality of life
N=91

Variables		Categories of Risk factors			χ^2 , df, p-value
Variables	Categories	Few	Many	Lot Many	Result
Quality of life	Poor	111	40	10	4.551,4 0.337 ^{NS}
	Average	55	22	8	
	Good	1	2	1	

NS- Non Significant at < 0.05

Table7 shows there is no significant association of categories of risk factors with quality of life at $p < 0.05$.

Table8:Association between quality of life of low back pain with selected socio-demographic variables
N=91

Sr. No.	Socio-demographic variables	Frequency (f)	Quality of life			χ^2 , df, p-value
			Poor f ₁ =56	Good f ₂ =32	Excellent f ₃ =3	
1.	Age (in years)					0.519,2, 0.772 ^{NS}
	21-25	46	29	15	2	
	26-30	45	27	17	1	
2.	Weight (in Kg)					4.494,4, 0.343 ^{NS}
	<50	27	13	12	2	
	51-100	63	42	20	1	
	>100	1	1	0	0	
3.	Height (in cm)					4.747,6, 0.577 ^{NS}
	141-150	9	4	4	1	
	151-160	64	41	22	1	
	161-170	16	9	6	1	
	171-180	2	2	0	0	
4.	BMI (Kg/m²)					9.328,8, 15.507 ^{NS}
	Less than 18.5 (Underweight)	9	8	0	1	
	18.5-24.9 (Normal)	65	38	25	2	
	25-29.9 (Overweight)	17	10	7	0	
6.	Marital status					4.682,2,
	Married	5	1	4	0	
	Unmarried	86	55	28	3	
	Divorced	0	0	0	0	

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	Widow/widower	0	0	0	0	0.096 ^{NS}
	Separated	0	0	0	0	
6.	Educational qualification					
	G.N.M	27	15	10	2	2.732,4, 0.604 ^{NS}
	Basic B.Sc. Nursing	55	36	18	1	
	Post basic Nursing	9	5	4	0	
	M.Sc. Nursing/M.Phil.	0	0	0	0	
Ph.D. Nursing	0	0	0	0		
7.	Monthly family income (in Rupees)					
	Upto 30,000/-	17	8	9	0	4.989,4, 0.288 ^{NS}
	30,001-60,000/-	60	40	17	3	
	60,001-90,000/-	14	8	6	0	
Above 90,000/-	0	0	0	0		
8.	Total number of children (to be filled by females)					
	Not applicable	90	55	32	3	0.632,2, 0.729 ^{NS}
	None	1	1	0	0	
	One	0	0	0	0	
	Two	0	0	0	0	
	Three	0	0	0	0	
Four	0	0	0	0		
9.	Family history of low back pain					
	Yes	35	25	9	1	2.382,2, 0.304 ^{NS}
No	56	31	23	2		
10.	Mode of transport (most of the times)					
	Car	29	18	10	1	6.283,10, 0.791 ^{NS}
	2 wheeler	46	29	15	2	
	Standing in metro/bus	5	1	4	0	
	Sitting in metro/bus	3	2	1	0	
	Auto rickshaw	6	4	2	0	
By foot	2	2	0	0		
11.	Duration of travel to reach workplace (in minutes)					
	<30	42	25	16	1	0.440,2, 0.802 ^{NS}
31-60	49	31	16	2		
12.	Present area of work					
	Ward	27	16	9	2	10.410,8, 0.237 ^{NS}
	OPD	25	17	8	0	
	ICU	30	20	10	0	
	Emergency	2	0	2	0	
Radiology department	7	3	3	1		
13.	Previous area of work					
	Ward	17	7	10	0	12.166,8, 0.144 ^{NS}
	OPD	44	31	12	1	
	ICU	22	15	5	2	
	Emergency	2	1	1	0	
Radiology department	6	2	4	0		
14.	Total work experience (in years)					
	<1 year	43	26	17	0	7.036,4, 0.134 ^{NS}
	1-3 years	42	28	12	2	
>3 years	6	2	3	1		
15.	Total working hours per week					
	31-40	22	11	11	0	3.925,4, 0.416 ^{NS}
	41-50	68	44	21	3	
	51-60	1	1	0	0	
16.	Mostly on which shift					
	Morning	39	24	13	2	0.760,2, 0.684 ^{NS}
	Evening	52	32	19	1	
Night	0	0	0	0		
17.	Wearing heels					
	Never	21	11	10	0	10.989,4, 0.027 [*]
	Occasionally	67	44	21	2	
Daily	3	1	1	1		
18.	Food habits					
	Vegetarian	29	18	10	1	0.654,4, 0.957 ^{NS}
	Non vegetarian	61	37	22	2	
Eggetarian	1	1	0	0		
19.	Coffee intake					
	Never	14	8	6	0	8.054,4, 0.090 ^{NS}
	Occasionally	73	45	26	2	
Daily	4	3	0	1		

*-Significant at p<0.05NS- Non Significant at p <0.05

Table 8 shows there is a significant association of wearing heels with quality of life at $p < 0.05$.

IV. Discussion

Present study showed that low back pain was present in 91 (36.4%) staff nurses out of 250 staff nurses. Similar study was conducted by **Mahnaz Ahmadi, Jahangir Rezaiee, and Amir Hossein Hashemian. 2014** showed that 41.8% of staff nurses experienced low back pain.¹⁰ Whereas present study showed that 36.4% staff nurses were having low back pain out of 250 staff nurses. Study conducted by **Guna Sankar Ahdhi, Revathi Subramanian, Ganesh Kumar Sayal, Thiruvanthipuram Venkatesan. 2019** revealed prevalence of low back pain to be 42%.¹¹ Study done by **Asha T Aniyam. 2017** revealed that 46.66% staff nurses were having moderate low back pain as compared to present study which revealed 73.6% staff nurses having moderate low back pain.¹² Study was conducted by **Muaadh Abdulghani Ghaithan Al-samawi, Higazi Mohammed Ahmed Abdallah Awad. 2015** revealed that 52.9% subjects rated their pain as moderate pain.¹³

A study conducted by **Kyung Ja June, Sung-Hyun Cho. 2011** revealed that 64% had inadequate working hours.¹⁴ Whereas in present study 74.7% staff nurses had 41-50 total working hours per week. Study done by **Deepak B. Anap, Chandra Iyer, Keerthi Rao. 2013** revealed that staff nurses suffering from work related musculoskeletal disorders had risk factors such as working in the same positions for long periods (47.6%), lifting or transferring dependent patients (52.4%), carrying, lifting or moving heavy material or equipments (42.4%) were the most perceived job risk factors were seen in precipitating Work related musculoskeletal disorders (WMSDs) during their hospital duties.⁴ Whereas present study showed assisting patient while lifting or transferring (85.7%) and lifting, moving heavy equipment (s) (89.0%).

In present study out of 91 staff nurses, 56 (61.50%) staff nurses had poor quality of life, 32 (35.20%) staff nurses had good quality of life, and 3 (3.30%) staff nurses had excellent quality of life. Study was conducted by **Guna Sankar Ahdhi, Revathi Subramanian, Ganesh Kumar Sayal, Thiruvanthipuram Venkatesan. 2019** revealed that almost 72% of women with low back pain perceived their QOL as good.¹¹ Whereas in present study 35.4% staff nurses having low back pain perceived their QOL as good.

In present study, it was found that prevalence of low back pain had significant association with BMI (Kg/m^2) and present area of work at $p < 0.05$. Study was conducted by **Wided Boughattas, Olfa El Maalel, Maher Maoua, Iheb Bougmiza, Houda Kalboussi, Aicha Brahem, et.al. 2017** revealed that staff nurses having high BMI, number of pregnancies, arthritis, poor physical condition, daily frequency of inappropriate posture for the activity being performed, and the layout of materials in the workplace were significantly associated to low back pain.¹⁵ Study was conducted by **Amany M Abou El-Soud, Amany R El-Najjar, Nada A El-Fattah, Aida A Hassan. 2014** showed that there was a highly significant association between LBP and body mass index (BMI) ($P < 0.001$).¹⁶ Study was conducted by **Nirmala M Emmanuel, Punitha Ezhilarasu and Anu Bharathy Bheemarao. 2015** revealed that there was a significant association ($p < 0.001$) between LBP and age, body mass index, experience, and place of work.¹⁷

V. Conclusion

In present study, it was seen that there was significant association of low back pain with selected socio-demographic variables like BMI (Kg/m^2) and present area of work at $p < 0.05$. Significant association was found between categories of risk factors with prevalence of low back pain at $p < 0.05$. Therefore, it can be implicated that risk factors should be reduced as much as possible to reduce the prevalence of low back pain. Limitation of the study was that only one hospital was selected for conducting study. Similar study can be conducted among staff nurses of operation theatre and intensive care unit where staff nurses are more prone to have low back pain.

Acknowledgement

I am grateful to Almighty God and my parents **Mr. Chuni Lal** and **Mrs. Sudesh Kumari**, who with their adorable antics rejuvenated my energy and all dreams that I ever aspired for myself.

I am thankful to **Mr. Barjinder Kumar Aneja, Statistician**, for guiding in the statistical analysis and interpretation of data.

Ethical Clearance

- Permission for research study was taken from ethical and research committee of Mata Sahib Kaur College of Nursing, Mohali.
- Permission from Private Hospital, Mohali, Punjab was taken to conduct research study.
- Written informed consent was taken from the participants in study.
- Confidentiality and anonymity of all respondents has been maintained.

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Shefali Chaudhary. "A Descriptive Study on Prevalence and Risk Factors of Low Back Pain and its Impact on Quality of Life Among Staff Nurses Working in Selected Hospital of District Mohali, Punjab, India" .IOSR Journal of Nursing and Health Science (IOSR-JNHS), vol. 8, no.05 , 2019, pp. 59-68.