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A Descriptive Study to Assess The Level of Knowledge of Nurses Regarding the Management of Pressure Ulcers.

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ABSTRACT

Pressure ulcers are a painful burden for patients, such wounds can cause. pain and deterioration of the underlying condition. In some hospitals, it causes. complications such as discomfort, pain, quality of life, costs, accommodation and may lead to a life-threatening condition, and it is one of the most common. The aim: of this research was a descriptive study to assess nurses. knowledge and prevention attitude regarding measures for preventing pressure. ulcers. Material and Methods: A self-developed questionnaire was made and was used for analyzing data. Results of the research showed a high level of knowledge and moderate level attitudes of nurses towards Pressure Ulcer prevention. Conclusion: The nurse's knowledge was high level but, in some items, identified as low level. Nurse prevention was at a moderate level but in some items identified a high level and in other items showed a very low level. There was no difference between nurses in PU knowledge and prevention due to the demographic variables except for working experience years' nurse's knowledge did not correlate with nurses' prevention of PU

1. INTRODUCTION

Pressure ulcers, also known as bedsores or pressure sores, are a significant healthcare problem worldwide. (Wake, 2010)They are defined as localized injuries to the skin and/or underlying tissue, usually over a bony prominence, as a result of pressure or pressure in combination with shear and/or friction.(Delisa & Mikulic, 1985) Pressure ulcers can cause immense pain, discomfort, and suffering for patients, leading to prolonged hospital stays, increased healthcare costs, and even mortality.(Ho et al., 2018) These wounds are preventable with appropriate nursing care and management.

However, studies have shown that healthcare professionals, including nurses, often lack adequate knowledge and skills in the management of pressure ulcers, which can have serious consequences for patient outcomes.(Blenman & Marks Maran, 2017)This descriptive study aims to assess the level of knowledge regarding the management of pressure ulcers among staff nurses in Misurata hospitals. (Ebi et al., 2019) Misurata, a city in Libya, has a significant healthcare system, and the findings of this study can provide valuable insights into the current state of knowledge and practices related to pressure ulcer management among nurses in this setting. By identifying gaps in knowledge, the study can contribute to the development of targeted educational programs and interventions to improve the quality of care provided to patients with pressure ulcers.(Muhammed et al., 2020), Background Pressure ulcers are a common healthcare problem, particularly among vulnerable populations such as the elderly, immobile patients, and those with chronic illnesses. These wounds develop when pressure on the skin and underlying tissues exceeds the capillary pressure, leading to tissue ischemia and subsequent tissue damage. (Reuler, 1981)(Schramm et al., 2006)The prevalence of pressure ulcers varies across different healthcare settings, with estimates ranging from 0.4% to 38% in acute care hospitals and up to 33% in long-term care facilities. (Boyko et al., 2018)The management of pressure ulcers involves a multidisciplinary approach, with nurses playing a crucial role in prevention, assessment, and treatment. Nurses are responsible for implementing evidence-based practices, such as regular repositioning of patients, maintaining optimal skin hygiene, (Whiteing, 2009)and using appropriate support surfaces, to prevent the development of pressure ulcers. Furthermore, nurses are also responsible for assessing the severity of pressure ulcers, implementing appropriate wound care interventions, and monitoring the healing progress.(Thomas & Compton, 2014).

2. METHOD

Data was collected using a questionnaire consisting of 26 questions in addition to demographic variables. The questions addressed the issues of the formation, prevention and treatment of pressure ulcers. The study was conducted at four hospitals in Misurata - Libya (Medical Misurata Center, Aspetar Hospital, Alhikma Hospital, Aljazeera International Hospital), the total questionnaires were distributed (90) and the total number received was (84). The Statistical Package for the Social Sciences (SPSS v 26) for Windows was used for data analysis, the data analysis including descriptive statistics and statistical tests was done using the SPSS. Independent variables were described by frequency (n) and percentages (%). Mean scores of knowledge were calculated by using descriptive statistics.

The differences in background characteristics towards knowledge regarding pressure ulcer prevention were examined by comparing mean (T-test and ANOVA) for demographics variables. The statistical significance was assumed to be $p \leq 0.05$.

Data Collection

The instrument for data collection was a self-developed and validated questionnaire., the questions were made depending on the literature review and some of them were taken for different questionnaires. The questionnaire consists of 28 questions. and were carefully written in English and Arabic. To establish content reliability and validity the instrument was given to 3 validators from college staff who were requested to give their opinion and suggestions regarding the adequacy. A sample of 15 participants was distributed and collected again to ascertain the reliability of the questionnaire. Split-half method was used for internal consistency reliability, the questionnaire was divided into two equivalent halves and correlation for the half test was calculated, the result was Spearman-Brown coefficient for both equal and unequal length = 0.812, and Guthman split-half coefficient =0.812 after two questions were cancelled and the final questionnaire consist 26 questions, as shown in Appendix A. The questionnaire was divided into three sections (A, B, C). section (A) contained the demographic data; and level of education. experience years, gender, age, and position work, section B consisted of 12 structured multiple-choice questions that assessed nurses' knowledge regarding pressure ulcers, and section C with 14 structured multiple-choice questions that assessed nurses' knowledge regarding pressure ulcer prevention. For sections B and C, three multiple choice answers regarding Likert scale Score (3) were given for the "true" answer, Score (2) for the "I do not know" answer, and Score (1) was given for the "false" answer. The questionnaire included positive and negative questions, questions number (Q1, Q10, Q25) in section B, and questions number (Q9, Q13, Q19, Q20, Q26) in section C were negative.

Data Analysis. The Statistical Package for the Social Sciences Version 26.0 (SPSS v 26) for Windows was used for the analysis of data, including descriptive statistics and statistical tests. Independent variables were described by frequency (n) and percentages (%). Mean scores and standard deviation were calculated for the descriptive
study. The level of significance used was 95% and probability value (α=0.05).
The level of pressure ulcer knowledge and prevention was categorized into five groups as shown in the table

3. ETHIC APPROVAL

The permission was taken from the hospital administration and the nurses of the Department of Surgery and the Department of medicine.

4. RESULT

The total number of nurses was (84) the result of the analysis as shown in Table (1) and Finger (1). 60.7% were male and 39.3% were female, they were aged between 19 and 50 years, with a mean of 26.5 years and a standard deviation of 6.6 years. Ages (21 to 23 years) and (24 to 26 years) recorded 28.6% which was the majority, and the minimum percentage was for 20 years or less (6%). For the level of education, 52.4% were university graduates and 47.6% were intermediate diplomas. The number of participants who had courses ranged from no course to 4 courses or more, 38.1% had one course which was the most, 25.0% had two courses, 15.2% had no courses, and 10.7%. 10.7% had three courses and four courses or more respectively. The average experience years of the nurses in this study was 5 years with standard deviation (SD=4.6) years, about a third of participants (36.9%) had 4 to 5 years, 28.6% had 2 to 3 years, 15.5% had 8 years and more, 9.5% had one year and 6 to 7 years.

Table 1 The level of knowledge

Level of Knowledge	Composite Percentage of Score
Very low	<60%
Low	60% - 69.99%
Moderate	70% - 79.99
High	80% - 89.99%
Very high	90% - 100%

Table 2 shows the participant's demographic characteristics.

Variable		%
GENDER	Male	60.7
	Female	39.3
Education Level	University	52.4
	Diploma	47.6
Experience	one year	9.5
	2 to 3 years	28.6
	4 to 5 years	36.9
	6 to 7years	9.5
	8 years and more	15.5
Training	no course	15.5
	one course	38.1
	two courses	25.0
	three courses	10.7
	four courses and more	10.7
Age	20 years and less	6.0
	21 to 23 years	28.6
	24 to 26 years	28.6
	27 to 29 years	20.2
	30 years and more	16.6
Working Place	Department	22.6
	Intensive Care Unit	61.9
	Observation	15.5

Nurse's knowledge of Pressure Ulcer

The results of the analysis of the nurse's knowledge of pressure ulcers are shown in Table (3) and the table ranked according to the highest trend. The overall knowledge of nurses regarding pressure ulcers was high (87.1%), with an average = 2.613 and a standard deviation (Of std=0.248).

It was found that six questions out of twelve (Q2, Q4, Q5, Q25, Q21, Q7) were trend to correct answers with a very high level of pressure ulcer knowledge (90.08% and above), and the average (≥2.69) with standard deviation (Sd ≤ 0.65), the significant of these questions were accepted that means There are statistically significant differences, between patricians (p-value = 0.000) for all these questions. For questions. (Q14, Q24, Q18 and Q1) recorded a high level of knowledge (88.89%, 84.52%, 84.13%, 80.56%) with the average and standard deviation. (2.67, 0.72), (2.54, 0.74), (2.52, 0.75), (2.42, 0.88) respectively and (p-value= 0.000) that means There were statistically significant differences between patricians for these four questions. Question (Q10,) recorded a moderate level of knowledge (78.17%,) with the average and standard deviation (2.34, 0.84), For this question 23.8% of the sample recorded it is not necessary to schedule the patient position in addition 16.7% of patricians they do not know the answer, and 38.1% recorded it is not necessary to schedule the patient position (p-value= 0.000) There were statistically significant differences, between patricians.

Table 3 Nurse's Knowledge of Pressure Ulcer

P-Value	T-test	%	St. D	Average	False(%)	Know (%)	True(%)	Questions
0.000	26.26	98.02	0.32	2.94	2.4	1.2	96.4	Q2 admission
0.000	19.90	96.43	0.41	2.89	3.6	3.5	92.9	Q4 instructed. patient
0.000	14.72	94.84	0.53	2.84	7.6	1.3	91.1	Q5 first step
0.000	13.00	92.46	0.54	2.77	6.0	10.7	83.3	Q25 stage1 erythema
0.000	10.44	90.08	0.62	2.70	8.3	13.1	78.6	Q21 stage 4
0.000	9.61	90.08	0.65	2.69	10.7	9.5	79.8	Q7 Rehabilitation guidance family
0.000	8.52	88.89	0.72	2.67	14.2	4.8	81.0	Q14 immobility incontinence
0.000	6.67	84.52	0.74	2.54	14.2	17.9	67.9	Q24 stage 3
0.000	6.38	84.13	0.75	2.52	15.5	16.6	67.9	Q18 second stage
0.000	4.33	80.56	0.88	2.42	67.8	6.0	26.2	Q1 responsibility
0.000	3.75	78.17	0.84	2.34	58.3	17.9	23.8	Q10 schedule
0.774	0.72	69.05	0.92	2.07	38.1	16.7	45.2	Q22 stage skin loos

Q22 which is for stage 2 Pressure Ulcer the skin full thickness loss recorded a low level of knowledge (69.05), 45.2% of nurses believe that the skin is fully loss in stage two while 38.1% gave false answers, and 16.7% of patricians did not the answer (p-value= 0.774) so There are no statistically significant differences between patricians.

A T-test was used to determine if there was a difference between participants' answers in PU knowledge due to their level of education or not. The result of the analysis indicated that the mean of the two groups of education levels was nearly the same as also the standard deviation as shown in Table (4). The significant mean differences in knowledge regarding pressure ulcers between these two groups as shown in Table (4). Levine's Test for Equality of Variances and T-test =0.934, (p=0.156). Thus, the result was not significant, and the null hypothesis was accepted, in other words, there was no significant difference in mean nurse's knowledge scores between university graduates and Intermediate diplomas.

4 T-test for the difference of education level and PU Prevention

Variable	Education level	Number	Mean	Std. D
Knowledge	Intermediate diploma	40	2.58	0.38
	univ graduate	44	2.65	0.37

Table .5 Levine's Test for Equality of Variances

	Levine's Test for Equality of Variances		t-test for Equality of Means	
	p-value	T	p-value	F
Equal variances assumed	0.934	-1.433	0.156	0.007
Equal variances not assumed		-1.433	0.156	

For the gender the data analysis shows that the average of the male answers is equal to the answers of the females, the standard deviation is almost equal, and the variance was homogenous (F=0.708, sig = 0.402) and this may indicate that there were no differences in the answers. (t = 0.783) and (sig = 0.436). as shown in table (4.5) Therefore, the null hypothesis is accepted, meaning there were no statistically significant differences between the nurses' knowledge according to the gender of nurses.

Table 6 T-test for the difference between males and females regarding nurses'knowledge

	Gender	n	Average	St. D
Nurses knowledge	female	33	2.590	0.240
	Male	51	2.634	0..035

Variance	Levene's Test		T-test	
	F	p-value	T	p-value
Equal variance	0.708	0.402	0.-783	0..436
Unequal variance				

ANOVA test was used to determine if there was a difference between participants' answers in nurse attitude prevention due to demographic variables, training courses, nurse's age, and working department. The result of the analysis indicated that the p-value for mean differences in nurse attitude prevention re- regarding pressure ulcers for all these demographic variables was more than 0.05 and the results as shown in Table (.6). Since the level of significance is greater than 0.05, we accept the null hypothesis. In other words, there were statistically significant differences between the nurses due to working experience years, training courses, nurse's age, working department.

Table 7 Anova test analysis for demographic variables.

Demographic variables	F	p-value
training courses	1.914	0.116
Age	2.143	0.083
working department	0.655	0.522

For working experience years, descriptive characteristics results for testing difference PU knowledge and working experience years as shown in table (5), from the table it can be recorded that there were differences in average and standard deviations between groups, the nurse's experience of 8 years and more had greatest average and minimum average for nurses of experience of one year.

Table 8 Descriptive characteristics results for testing difference PU knowledge and working experience years

	Experience years	N	Mean	Standard deviation
KNOWLEDGE	One year	8	2.51	0.300
	2 to 3 years	24	2.64	0.226
	4 to 5 years	31	2.55	0.222
	6 to 7 years	8	2.54	0.289
	8 years and more	13	2.83	0.140
Total		84	2.62	0.246

The result of ANOVA analysis showed that (F=4.315) and (p-value=0.003) as shown in table (.9), the p-value for mean differences of knowledge the group's experience years was (p-value=0.003), less than (α=0.05). thus, the null hypothesis was rejected, and the result was significant, in other words, there was a significant difference in mean knowledge scores between degrees of experience years. this led to a test of two homogeneities of Variances by the Levene Statistic test as shown in table (7), (p-value =0.003) so the variance was not the Homogeneity test. Tamhane Test was used to determine which groups had a variance. the result is shown in Table (8).

Table 9 Result of the ANOVA test

Variances	Sum ofsquares	Degree offreedom	Mean squares	F	p-value
Betweengroups	0.889	4	0.225	4.315	0.003
withingroups	4.166	79	0.052		
Total	5.016	83			

Variances	Levene Statistic	
	F	p-value
Homogeneity	2.614	0.041
Non Homogeneity		

To determine which groups had a variance. the result of the Tamhane test and the mean difference between groups as shown in Table (10) From this table the nurses of experience 2 to 3 years had knowledge more than nurses of 8 years and more and it was statistically significant (p-value = 0.038), also that the nurses of experience 4 to 5 years had knowledge more than nurses of 8 years and more and it was statistically significant (p-value = 0.000). Other age groups the statistically significant (p-value ≥ 0.05) so there was no difference in nurses' knowledge re- regarding the year of working experience.

Table .10 Tamhane test to determine the mean difference between the group's experience working years

	1 year	2 to 3 years	4 to 5 years	6 to 7 years	8 years and more
One year	#	0.13542	0.04066	0.03125	0.3229
2 to 3 years	#	#	-0.09476-	-0.10417	-0.18750-*
4 to 5 years	#	#	#	-0.00941	0.28226*
6 to 7 years	#	#	#	#	0.29167
8 years and more	#	#	#	#	#

*. The mean difference is significant at the 0.05 level

A correlation analysis was done to find if there was a correlation between demographic variables and nurses' knowledge and results indicated a very low correlation between nurse's attitude prevention variables and demographic variables Pearson Correlation Coefficient and statistical significance (p-value) as shown in table (4.5)

Table 4.11 correlation between demographic variables and nurse's knowledge

KNOWLEDGE	R	P-value
education level	0.156	0.156
experience years	0.251	0.021
training courses	0.108	0.327
Gender	0.086	0.436
Age	0.109	0.323
working department	-0.030	0.785

Nurse's Prevention of Pressure Ulcer

The analysis of the nurse's prevention of pressure ulcers (section C) is shown in Table (12) and the table ranked according to the highest trend. The overall prevention attitude of nurses regarding pressure ulcers was moderate (78%), with the average =2.28 and standard deviation (Std=0.21). The analysis recorded that six questions out of fourteen (Q11, Q3, Q15, Q17, Q8, Q12) were trend to correct answers with a very high level of pressure ulcer prevention (91.27% and above), and the average (≥2.74) with standard deviation (Sd ≤ 0.54), the P- value of these questions were accepted that means There are statistically significant differences, between patricians (p-value = 0.000) for all these questions. Questions number (Q26, and Q6) recorded a high level of knowledge (89.29%, 83.33%) with average and standard deviation (2.68, 0.71), (2.50, 0.8), respectively, and (p-value= 0.000) that means There were statistically significant differences between patricians for these two questions. Questions (Q16, Q20, Q23, and Q9) recorded a moderate level of prevention attitude (77.78%, 71.83%,71.03%, 70.24%) with the average and standard deviation (2.42, 0.88), (2.16, 0.95), (2.13, 0.86), (2.11, 0.98), and (p-value= 0.139), (p-value= 0.167), (p-value= 0.320) (p-value= 0.001) re- sportively.

Questions number (Q13, Q19) at a very low level with a low average and high standard deviations (1.69,0.82), (1.39,0.79) respectively. For question (Q13) which was "In a side-lying position, the bed headboard should be lifted in an angle higher than 30", 53.6% of the sample recorded it as true, 23.8% did not know the answer and 22.6% recorded it is incorrect. For question (Q19) which was "Changing the patient's position every 4 hours prevents and reduces the occurrence of bed score", 78.6% of the sample recorded it as correct, 3.6% did not know the answer and 17.8% recorded it as incorrect.

Table 12 the nurse’s prevention of pressure ulcer

p-value	T-test	%	St. D	Average	False %	know %	True %	Questions
0.000	32.1	98.41	0.26	2.95	1.2	2.4	96.4	Q11 chair cushion
0.000	-4.56	96.43	0.79	1.59	19	12	69	Q3 Using warm water and soap
0.000	16.01	95.63	0.84	2.87	6.0	1.2	92.9	Q15 to heal properly
0.000	11.9	93.25	0.60	2.80	9.5	1.o2	89.3	Q17 clean with saline solution
0.000	10.9	91.27	0.54	2.74	8.3	9.5	82.2	Q8 transfer by sheet or linings
0.000	12.2	91.27	0.54	2.74	4.8	16.7	78.6	Q12 Indirect contact of bone prominences
0.000	8.49	89.29	0.71	2.68	82.1	3.6	14.3	Q26 use the air mattress
0.000	5.59	83.33	0.80	2.50	7.6	1.3	91.1	Q6 15 minutes in chair
000.0	3.97	77.78	0.88	2.42	16.7	33.3	50.0	Q16 skin doesn't blanch
0.139	1.46	71.83	0.95	2.16	53.6	8.3	38.1	Q20 reducespressure and friction
0.167	1.36	71.03	0.86	2.13	82.1	3.6	14.3	Q23 using a soft sponge
0.320	0.98	70.24	0.98	2.11	42.9	3.6	53.5	Q9 evaluates patients once
0.001	-3.37	56.35	0.82	1.69	22.6	23.8	53.6	Q13more than 30-degree angle
0.000	6.99	46.43	0.78	1.39	17.8	3.6	78.6	Q19 changes position every 4hours

To determine if there was a difference between participants' answers in nurse’s prevention due to level of education and gender. A T-test was used. The result of the analysis indicated that the mean of the two groups of education levels was nearly the same as also the standard deviation as shown in Table (4).

The significant mean differences in knowledge regarding pressure ulcers be- tween these two groups as shown in Table (4).

Levene's Test for Equality of Variances and (T =0.0.013, (p=0.989). Thus, the result was not significant, and the null hypothesis was accepted, in other words, there was no significant difference in mean nurse’s knowledge scores between university graduates and Intermediate diplomas.

Table 13 T-test for the difference between education levels regarding nurse prevention

	Education level	n	Average	Standard deviation
nurses knowledge	female	33	2.383	0.199
	Male	51	2.383	0.225

Variance	Levene's Test		T-test	
	F	p-value	T	p-value
Equal variance	0.004	0.949	0.013	0.989
Unequal variance				

For the gender, the data analysis shows that the average of the male answersis equal to the answers of the females, the standard deviation is almost equal, andvariance was homogenous (F=0.004, sig = 0.949) and this may indicate that therewere no differences in the answers. (t = 0.013) and (sig = 0.989). as shown in Table (13 Therefore, the null hypothesis is accepted, meaning there were no statistically significant differences between the nurse's knowledge according to thegender of nurses.

Table 14 T-test for the difference between males and females regarding nurse's knowledge

	gender	n	Average	Standard deviation
nurses knowledge	female	33	2.383	0.199
	Male	51	2.383	0.225

variance	Levene's Test		T-test	
	F	p-value	T	p-value
Equal variance	0.004	0.949	0.013	0.989
Unequal variance				

ANOVA test was used to determine if there was a difference between partic- ipants' answers in nurse's attitude prevention due to demographic variables, working experience years, training courses, nurse's age, and working department. The result of the analysis indicated that the p-value for mean differences in nurse attitude prevention regarding pressure ulcers for all these demographic variables was more than 0.05 and the results as shown in table (4.6). Since the level of significance is greater than 0.05, we accept the null hypothesis. In other words, there were statistically significant differences between the nurses due to working experience years, training courses, nurse's age, and working department.

Table 15 Anova test analysis for demographic variables

demographic variables	F	p-value
working experience years	0.722	0.580
training courses	0.976	0.425
Age	0.972	0.428
working department	0.751	0.475

A correlation analysis was done to find if there was a correlation between demographic variables and nurse prevention, and results indicated a very low correlation between nurse's attitude prevention variables and demographic variables Pearson Correlation Coefficient and statistical significance (p-value) as shown in table (5). Also, the correlation between PU knowledge and nurse's PU prevention was very low (Pearson Correlation = 0.225).

Table 16 Correlation between demographic variables and nurse’s PU prevention

Prevention	Pearson correlation	p-value
education level	0.092	0.403
experience years	0.037	0.741
training courses	0.064	0.565
Gender	-0.001	0.989
Age	0.131	0.237
working department	0.005	0.963

5. DISCUSSION

Nurses' PU knowledge was recorded as high level and nurses' PU attitude prevention was recorded as moderate. There is no statistically significant relationship between the demographic variables of the respondents and their knowledge of pressure ulcers except for working experience years. and There is no statistically significant relationship between the demographic variables of the respondents and PU attitude prevention. There was no correlation between the demographic variables and PU knowledge and prevention of PU.

6. CONCLUSION

The nurse’s knowledge was high level but, in some items, identified as low level. Nurse prevention was at a moderate level but in some items identified a high level and in other items showed a very low level. There was no difference between nurses in PU knowledge and prevention due to the demographic variables except working experience years nurse’s knowledge did not correlate with nurses' prevention of PU

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