Psoriasis Severity and Functional Disabilities among Patients with Psoriasis

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Abstract

Background: Psoriasis significantly impacts patients' physical and mental well-being, leading to functional limitations in various domains. Understanding the link between disease severity and functional disabilities is crucial for optimizing treatment strategies and improving patient outcomes. **Aim:** was to explore the relation between psoriasis severity and functional disability among patients with psoriasis. **Design:** A correlation and cross-sectional research design was employed to achieve the current study aim. **Setting:** The current study was carried out at Kasr Al-Ainy Psoriasis Unit and Dermatology Department. **Sample:** A purposive sample of 150 participants was recruited for the study. **Tools:** three tools were used by the researchers for data collection; Tool (I): Participants' Socio-Demographic Characteristics and Medical Related Data form; Tool (II) Psoriasis Area and Severity Index (PASI) and Tool (III) Psoriasis Disability Index (PDI). **Results:** Mean age of the current study participants were (38.9±7.85), (38%) of participants had severe PASI score and (52.6%) of them had severe PDI score. the total PDI had a positive strong correlation with PASI score ($r=0.751$, $p<0.005$). **Conclusion:** Based on the results of the current study, there was a significant correlation between all components of PDI and PASI scores particularly the daily activities and work; in addition, the total PDI score had a positive strong correlation with PASI score. **Recommendations:** Development of evidence-based guidelines for managing functional limitations in psoriasis patients is crucial.

Keywords: Patients, Psoriasis Severity & Functional Disabilities

Introduction

Psoriasis is an erythrosquamous dermatosis and immune-mediated that affects over 125 million individuals globally and can range in severity **(Khalid et al., 2021)**. Psoriasis's precise causes are not entirely known. Numerous risk factors are known, such as environmental variables including stress and smoking as well as family history (**Roszkiewicz et al., 2020)**. Additional risk factors encompass infections such as strep throat or skin infections, scraping, insect bites, skin lesions like cuts, or extreme sunburns, obesity, and specific medications like antimalarials, high blood pressure medications, and lithium; additionally, abrupt discontinuation of oral or injectable corticosteroids can also pose a risk (**van Acht et al., 2022; Yamanaka, Yamamoto, & Honda, 2021)**.

There are various forms of psoriasis, including pustular, flexural, guttate, plaque, and erythrodermic. The most prevalent kind of psoriasis is called plaque psoriasis, and it usually affects the extensor surfaces, particularly the scalp, knees, elbows, and trunk. It looks like well-defined salmon-pink plaques with a scale that is silvery-white. Flexural psoriasis can impact the sub-mammary, axillae, and vaginal region and typically manifests without much scaling **(Nast et al., 2021).**

Acute symmetrical eructation of drop-like plaques, primarily affecting the trunk and limbs, is the hallmark of guttate psoriasis. Streptococcal infection is typically the origin of this condition, however it is not always the case. Individuals with guttate psoriasis may progress to plaque psoriasis. Erythrodermic psoriasis, the least common kind, can cause a peeling rash that can burn or itch severely over the entire body. It may have an acute life span or a chronic one **(Sbidian et al., 2023; Ruggiero et al., 2022).**

Depending on the type of psoriasis, there can be differences in the indications and symptoms. Psoriasis is most commonly characterized by painful, itchy skin lesions that can split or bleed, colouring and pitting in the fingernails and toenails, crumbling or separation of the nails from the nail bed, swollen joints, and stiffness. **(Camela et al., 2022; Yamazaki, 2021).** It is important to understand the diverse manifestations and associated challenges in order to develop effective treatment plans and

promote emotional and social well-being **(Moon et al., 2023; Norlin et al., 2020).**

A variety of treatment options are used to manage psoriasis symptoms and improve patients' well-being. Personalized treatment plans are formulated based on patients' needs and disease severity. Topical medications such as corticosteroids and creams effectively reduce inflammation and scaling for mild to moderate cases. Vitamin D-based treatments regulate skin cell growth and the immune system, while immune-suppressing creams are particularly effective for scalp psoriasis. Emollients keep the skin hydrated, reducing dryness and itching. Controlled ultraviolet light sources used in phototherapy and laser therapy target specific areas to manage outbreaks **(Ruggiero et al., 2022; Nast et al., 2021).**

In addition, systemic medications such as methotrexate and cyclosporine, which suppress the immune system are effective for moderate to severe psoriasis, as well as biologics that block specific proteins involved in the inflammatory process, offer highly effective treatment for severe psoriasis **(Estevinho, Lé, & Torres, 2023).**

Psoriasis presents major challenges for patients' daily life and functioning. It can lead to social stigma, discomfort, pain, physical limitations, also psychological stress. Patients with psoriasis may suffer evidential physical discomfort and even disability due to itching and pain, which can interfere with basic tasks. Nurses play a critical role in helping patients with psoriasis manage the impact of the disease on their functional disabilities **(Frede et al., 2023)**.

By understanding the relationship between psoriasis severity and functional limitations, nurses can develop and implement effective interventions to improve the quality of life for patients living with this chronic condition. Therefore, the current study aimed to explore the relation between psoriasis severity and functional disability among patients with psoriasis.

Significance of the study

The World Health Organization considers psoriasis a significant worldwide health issue. It's affecting more and more people of all ages, both adults and children, around the globe, with estimates suggesting 2-4% of the population experiences it **(Damiani et al., 2021).** Statistics reported that there are over one million Egyptian patients had psoriasis, of which 145,000 have moderate and severe cases **(Mohammed et al., 2023; Elzehiri, Srour & Salime, 2022)**.

Psoriasis is a long-lasting skin condition with painful, disfiguring, and disabling effects. It significantly impairs patients' lives, impacting their emotional, physical, sexual, and socioeconomic well-being. The challenges posed by psoriasis can be overwhelming, exceeding the coping abilities of individuals and their support networks. Many patients with severe psoriasis express dissatisfaction with available treatments and lack sufficient information about the disease. This lack of knowledge can delay treatment, worsen symptoms, and ultimately lead to greater disability **(Yamazaki, 2021).** Moreover, psoriasis has a profound impact on lives of millions worldwide. Therefore, the current study paves the way for exploring the relationship between psoriasis severity and functional disability.

Aim of the study:

The aim of this study was to explore the relationship between psoriasis severity and functional disability among patients with psoriasis. The following research questions were developed in order to accomplish this goal:

Research questions:

Q_1: How do different psoriasis disability index components (daily activities, work/school, personal relationships, leisure time and treatment) relate to overall psoriasis area severity index among study participants?

Q_2: To what extent the overall psoriasis area severity index correlate with overall psoriasis disability index among study participants?

Q_3: How do Socio-Demographic data correlate to overall psoriasis area severity index and overall psoriasis disability index among study participants?

Q_4: How do medical related data correlate to overall psoriasis area severity index and overall psoriasis disability index among study participants?

Methods:

Research Design:

A correlational and cross-sectional research design was employed to achieve the current study aim. It allows for the examination of the strength and direction of relationships between variables at a specific point in time. This design is particularly useful for identifying patterns and associations between variables (**Maciejewski, 2019**).

Setting:

This study took place at the Kasr Al-Ainy Psoriasis Unit, a specialized clinic established in 2015 at Cairo University's Faculty of Medicine. With over 3200 registered patients, it's one of Egypt's largest and longest-running centers for psoriasis care. The unit's extensive database offers valuable insights into the demography, epidemiology, treatment, and patient response of psoriasis in Egypt.

Sample:

A purposive sample of 150 participants was eligible for the study and met the following criteria: they were adults between 20 and 60 years old, had a confirmed and documented dermatologist diagnosis of psoriasis in their medical records, had no history of other dermatological diseases, were willing to take part in the study, and did not have any mental disorder.

Sample Size Calculation: Epi info -7 program was used utilizing the following parameters. Population size=400, Acceptable error= 5%, Confidence coefficient=95 %, Expected frequency=50%, thus minimum sample size= 150 patients.

Tools of data collection:

Three tools were employed by the researchers to gather data:

Tool (I): Participants' Socio-Demographic Characteristics and Medical Related Data Form: such as age, gender, level of educational , occupation, residence, income, marital status, psoriasis type, duration of psoriasis , family history, smoking habits, body region affected, ….etc.

Tool (II): Psoriasis Area and Severity Index (PASI) which was developed by **Oakley A., (2009)** used in the current study. It includes two sections, the first section is related to severity of psoriasis lesions through assessing the following three factors: 1-erythema (redness), 2-induration (thickness) and 3-scaling on four body regions: head/neck, upper limbs, trunk, and lower limbs. While the second one is related to percentage of body surface area affected with psoriasis that was measured through rule of nine methods.

Scoring system:

The severity of plaque occurrence (redness, thickness, and scaling) of the affected areas is assigned on a score from 0 to 4, as follows; none (zero), mild (one), moderate (two), severe (three), or very severe (four).While the assessment of the percentage area affected in each regions was expressed as nil (score zero), < 10 % (score one), 10% - 29% (score two), 30% - 49 % (score three), 50% - 69% (score four), 70% - < 89% (score five) or 90% - < 100% (score six). The total PASI score was calculated by summing the severity scores for the above mentioned three factors in the four body region multiplying by area percentage by a weighting factor for that region (Head: 0.1, Upper extremities: 0.2, Trunk: 0.3 and Lower extremities: 0.4). A total score of (<5) is considered mild, (5- < 12) is considered moderate psoriasis, (12-20) is considered severe psoriasis and (>20) is considered very severe.

Tool (III): Psoriasis Disability Index (PDI) scale that was created by **Finlay and Coles (1995),** the Arabic version adopted by **Zedan et al., (2016)**, was utilized in the current study. There were fifteen questions in total, measuring the functional impairment brought on by psoriasis throughout the previous four weeks. These questions fell into five categories: daily activities (5 questions), work/school (3 questions), personal relationships (2 questions), leisure time (4 questions), and treatment effect (1 question).

Scoring system:

Each question of the 15 items of PDI scale is graded on a four-point likert scale, with responses ranging from zero to three as follow, not at all (zero) a little (one), a lot (two), and very much (three). A total scores of (zero-ten)

indicates minimal effect on functional ability, (11-20) mild effect, (21-30) moderate effect, (31-45) severe effect.

Content Validity and Reliability:

Five experts from Medical Surgical Nursing department, medical biostatistics, and in addition to dermatology diseases' specialist reviewed the study tools to assess their content validity for clarity, relevancy, comprehensiveness, and applicability. Modifications were made accordingly. In addition, Cronbach's alpha standards were calculated to estimate the internal consistency of the study tools. Psoriasis Area and Severity Index has a Cronbach's alpha of 0.75, while Psoriasis Disability Index had a Cronbach's alpha of 0.80.

Pilot study:

The researchers carried out a pilot study on 10% of the participants (15 patients) to evaluate the applicability and clarity of the study tools in addition to feasibility of the study before conducting the main study. The pilot study also aimed to estimate the required time needed for completing the questionnaire. Participants involved in the pilot study were take out from the target sample size.

Ethical Considerations:

The researchers obtained approval from the Research Ethical Committee at the Faculty of Nursing, Helwan University, Egypt **(code 33, dated 29/3/2023)**, and an official permission was granted by the hospital administrator prior to conducting the study. Participants were informed about the goal of the study. And their right to withdraw from participation without penalty.

Field work and Data Collection

Data was collected through six consecutive months from the beginning of April 2023 until the end of September, 2023. Fieldwork is accomplished through the following three phases:

Preparatory and planning phase

In this phase, the researchers were concerned about the feasibility of implementing the study, the accessibility of participants, the environment, and the facilities in which the current study was carried out. After that, the researchers surveyed related tools to select the most appropriate for the current study to assess psoriasis severity and functional disabilities among patients with psoriasis. The first tool was developed by the researchers after an extensive review of recent literature. The content validity was established for the selected tools, namely; psoriasis area and severity index and psoriasis disability index. Afterward, the researchers got a written approval from the relevant authorities to conduct the current study.

Implementation phase

After identifying eligible participants, individualized interview sessions were conducted to gather data. At the outset of each interview, the study's purpose, nature, and tools were explained to each participant. Consequently, written consent was obtained from all participants who met the inclusion criteria and agreed to participate in the current, and then the study tools were completed by the researchers.

Evaluation phase:

Psoriasis area and severity index and psoriasis disability index were evaluated, the correlation between psoriasis area and severity index and demographic and medical related data were also investigated. Moreover, the relation between PASI and PDI were tested.

Data Analysis

The current study utilized Statistical Packet for the Social Sciences version 20 (SPSS-v20) software to analyze the data (Social Science, IBM, USA, 2020). Descriptive statistics were tabulated to describe participants' demographic and medical information using means, percentages, and standard deviations. Chi square test was utilized for categorical data and Pearson correlation coefficient was measured to assess the correlation between PASI and PDI scores. A p-values less than 0.05 were considered as statistically significant.

Results

Table (1) demonstrates that the mean age of the participants is 38.9±7.85 with the high percent (48.33%) are between 30 - < 40 years old, 65.33% are male, 56% are non-smokers, 77.3% are married, 40.7% have middle level of education, 62% are workers and 55.3% are living in urban areas. It also displays statistically significant relationships are detected between both total psoriasis area and severity index and total psoriasis disability index and participants' age, (X^2 = 5.405 & P=0.004, X^2 = 5.65 & P=0.001, gender (X^2 = 8.767 & P=0.003, X^2 = 9.654 & P=0.00) and smoking habits (X^2 = 10.23 & P=0.005, X^2 =13.986 & P=034); Moreover, there are statistically significant relationships between participants' total psoriasis disability

index and their occupation (X^2 = 7.061 & P=0.004)

Table (2) displays that 71.3% of the study participants had plaque psoriasis; 44% and 33.3% of them were suffering from psoriasis form one to less than five years and from five year to less than ten years respectively. In addition, 58.7% of the participants hadn't family history of psoriasis and 68% of them didn't admitted at hospital due to psoriasis before. Moreover, 24.7% and 42,7% of them didn't have any co-morbid disease, and were obese respectively.

Moreover, **table (2)** also refers that a statistical significant correlations were found between total psoriasis area and severity index and participants' psoriasis type (X^2 = 13.76 & P=0.000) and with body mass index (BMI) (X^2 = 7.26 & P=0.001). Moreover, there are significant correlations between total psoriasis disability index and participants' psoriasis type (X^2 = 8.69 & P=0.035), duration of psoriasis (X^2 = 5.70 & P=0.000 , and with BMI (X^2 = 5.846 & P=0.015).

Figure (1) displays that 28.7% of the current study participants had psoriasis in elbow and knee, while 25.3% of them had psoriasis in scalp.

Table (3) shows that 18.7% of participants had mild PASI score, 43.3% had moderate PASI score, 38% had severe PASI score and the mean PASI scores was 12.44±10.68. The same table displays that 20.7% of participants had mild PDI score, 26.7% had moderate, 52.6% had severe PDI score and the mean PDI scores was 15.45 ± 8.85.

Table (4) displays that the average total score of PDI was 10.6 ± 3.5, while the PDI domains average scores were 5.8 ± 2.3 for daily activities, 3.1 ± 1.56 for work or school, 1.8 ± 0.5 for personal relation, 1.3 ± 1.2 for leisure, and 1.0 ± 0.67 for treatment. The same table also shows that each component in PDI is correlated with total PASI scores as follow; the daily activities, work or school and leisure were moderately related with PASI score (r =0.577, p<0.001; r =0.556, p <0.001; r=0.471, p<0.001) respectively. While treatment and personal relation had weak correlation with PASI score (r=0.233,p<0.05; r=0.267, p <0.001; respectively). Moreover, total score of PDI had a positive high correlation with total PASI score (r=0.751, p<0.05).

Table (1): Frequency and Percentage Distribution of Socio- Demographic Characteristics and its Correlation to Total Psoriasis Area and Severity Index and Total Psoriasis Disability Index among Study Participants (n=150)

Socio-demographic characteristics	No	%	Total psoriasis area and severity index		Total psoriasis disability index	
			X^2	P-value	X^2	P-value
Age:						
20 - < 30	47	31.33	5.405	**0.004***	5.65	**0.001****
30 - < 40	**73**	48.33				
40 - ≤ 60	30	20				
Mean ± SD	38.9±7.85					
Gender:						
Male	**98**	65.33	8.767	**0.003***	9.654	**0.000****
Female	52	34.66				
Smoking habit						
Smoker	69	46	10.23	**0.005***	13.986	**0.034***
Non smoker	**81**	56				
Marital Status:						
Married	**116**	77.33	4.013	0.07	3.43	0.09
Not married	34	22.66				
Educational level:						
Unable to read and write	22	14.7				
Able to Read and write	34	22.6	3.895	0. 395		
Have middle level of education	**61**	40.7			3.67	0.281
Have University degree	33	22				
Occupation:						
Employee	**93**	62	3.412	0.063	7.061	**0.004***
Not employee	57	38				
Residence:						
Urban	**83**	55.3	2.056	0.93	3.67	0.59
Rural	67	44.7				

* Result is significant at p-value ≤ 0.05 ** Result is significant at p-value ≤ 0.01

Table (2): Frequency and Percentage Distribution of Medical Related Data and its Correlation to Total Psoriasis Area and Severity Index and Total Psoriasis Disability Index among Study Participants (n=150)

Medical related data	No	%	Total psoriasis area and severity index		Total psoriasis disability index	
			X^2	P-value	X^2	P-value
Type of psoriasis						
-Plaque-psoriasis.	**107**	71.3	13.76	**0.000*** **	8.69	**0.035***
-Guttate - psoriasis.	33	22				
-Inverse - psoriasis.	10	6.7				
Duration of psoriasis						
< one year	17	11.3				
One year - < 5 years.	**66**	44	3.01	0.067	5.70	**0.000*** **
5 year – < 10 years.	47	31.3				
> 10 years.	20	13.33				
Family history of psoriasis						
-Yes	38	25.3	9.013	0.083	10.63	0.13
- No	**88**	58.7				
-unknown	24	16				
Hospitalized because of Psoriasis:						
-Yes	47	31.33	1.895	0.543	4.32	0.070
- No	**103**	68.66				
***Co-morbidities**						
- None	**37**	24.7				
- Diabetes Mellitus.	19	12.7				
- Hypertension.	14	9.3	1.056	0.750	3.678	0.16
- Cardiac disease.	27	18				
- Renal disease.	11	7.3				
- Psoriasis Arthritis.	15	10				
- Asthma.	27	18				
Body Mass Index (kg/m2)						
< 18.5 (lower body weight)	5	3.3				
18.5–23.9(normal body weight)	28	18.7	7.26	**0.001***	5.846	**0.015***
24.0–27.9 (overweight)	53	35.3				
≥28(obesity)	**64**	42.7				

*Numbers are not mutually exclusive **Result is significant at p-value ≤ 0.05
***Result is significant at p-value ≤ 0.01

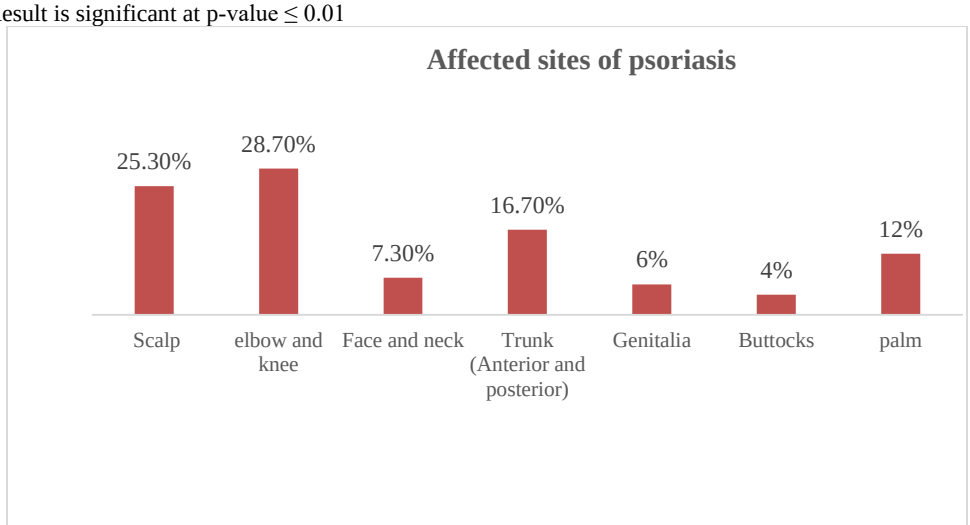

Figure (1): the affected body parts of psoriasis among study participants (n=150).

Table (3): Psoriasis area and severity index and psoriasis disability index among study participants (n=150)

Psoriasis Area and Severity Index	**No**	**%**	**Mean ± SD**
Mild (<5)	28	18.7	12.44±10.68.
Moderate ((5- < 12)	65	43.3	
Sever (12-20)	57	38	
Psoriasis Disability Index			
Mild (11-20)	31	20.7	15.45± 8.85
Moderate (21-30)	40	26.7	
Severe (31-45)	79	52.6	

Table (4): Correlation of psoriasis disability index with PASI Scores (n=150)

Psoriasis Disability Index components	**Mean ± SD**	**Psoriasis Area and Severity Index**	
		r	**P-value**
Daily activities	5.8 ± 2.3	0.577	0.000*
work/school, or alternative questions	3.1 ± 1.56	0.556	0.000*
Personal relationships	1.8 ± 0.5	0.267	0.000*
Leisure time	1.3 ± 1.2	0.471	0.000*
Treatment	1.0 ± 0.67	0.233	0.03**
Total Psoriasis Disability Index	10.6 ± 3.5	0.751	0.021**

*Result is significant at p-value ≤ 0.01 **Result is significant at p-value ≤ 0.05

Discussion:

Psoriasis is inflammatory, chronic skin condition that has a major functional and physical impact on its patients. Psoriasis affects people differently depending on how severe it is, but it can have a major influence on their lives and can cause functional impairments that are linked to disease activity **Salaffi et al., (2023**). Therefore, the aim of the current study was to explore the relation between psoriasis severity and functional disability among patients with psoriasis.

Regarding age, the current study result displayed that around half of participants were in the age category 30 - < 40 years old, with mean age 38.99±9.885. This result was in line with **Mohammed et al., (2023),** who reported that the mean age of the their participants was 37.49 ± 10.99 years. Moreover there were statistically significant relationships between participants' age and both psoriasis severity and functional disability

Pertaining to gender, the current study showed also that over half of the participants were male. This finding is matched with **Nabil, Nasr, and Shebl, (2023); Mohamed and Attia (2022).** On the other hand, this finding disagrees with **Mohammed et al., (2023).** From researchers' point of view, the factor that might contributed to this finding was recognized from the literature as well, testosterone levels might exacerbate psoriasis in men, while estrogen levels may play a protective role in women.

Concerning smoking habit, the finding of current study refered that more than half of participants were non-smokers, this finding agreed **Mohamed and Attia (2022).** Furthermore, the current study documented that there was positive correlation between smoking and both psoriasis severity and functional disability. This finding was supported by **Wei, et al., (2022); Adışen et al., (2018)** who reported in their study that smoking was positively associated with psoriasis severity.

In relation to marital status, According to the current study's findings, almost two thirds of the participants were married. This result in agreement with **Daglioglu, Cadirci, and Aksoy, (2020)** who found that nearly two thirds of their participants were married. From researchers' point of view, this result may be contributed to the fact that the participants of the current study are adult in the age group where most of them by default are married. In the same context, there wasn't a relation between marital status and both psoriasis

severity and functional disability. This phenomenon could be due to factors like increased social support, better stress management, or healthier lifestyle habits.

Regarding level of education, the current study result reported that more than one third of the participants had received middle level of education. This result supported by **Nabawy, Mohamed and Abdallah (2021)** who reported that nearly one third of their participants had intermediate education. This result may be related to the fact that more than half of participants were living in urban areas, where the nature of life motivate for education. While, this result wasn't supported by **Aalemi, Hamdard, and Sobat, (2022)** who reported in their study that (51.1%) of their participants were illiterate.

Moreover, the current study findings denoted that there wasn't a relation between educational level and psoriasis severity and functional disability. The factor that might contribute to this finding is the majority of participants were intermediate and university educated that lead to receiving adequate treatment, leading to better disease control. Furthermore, educated participants might have access to more flexible work arrangements or better workplace support mechanisms, mitigating the impact of psoriasis on daily activities.

Regarding occupation, the findings of the current study revealed that about two thirds of participants were employees. This result agreed with **Bulat et al., (2020)** who found that about half of their participants were employees. From researchers' point of view, this result may be due participants' age group is the age of working and productivity. In addition, the majority of participants were educated. In the same context, there wasn't a relation between occupation and psoriasis severity.

This result could be explained by the observation that occupations with high physical demands, such as manual labor or construction, could potentially exacerbate psoriasis through friction, stress, and sweating. While, there was a relation between occupation and functional disability. The possible factor that might contributed to this finding and was recognized from the literature as well, is the fact that psoriasis can cause pain, stiffness, and fatigue, which can interfere with job performance in any occupation.

Regarding place of residence, according to the current study's findings, over half of the participants lived in urban areas. This finding matched with **Sawicka, Zaba, and Adamski, (2021)** who found that about two thirds of their participants were living in urban areas. This result may be related the fact that, current study was carried out at Kasr Al-Ainy Psoriasis Unit and most of geographical areas around it is urban.

Concerning the type of psoriasis, more than two-thirds of the participants had Plaque psoriasis; which was supported by **Alhammad et al., (2021); Rendon and Schäkel (2019)** who declared that, plaque psoriasis is the most apparent type in their participants. Besides, there was a relation between type of psoriasis and psoriasis severity. In the researchers' point of view this result is due to the majority of participants was suffering from plaque psoriasis. This finding agreed with **Chenet al., (2023)** who reported in their study that there was a significant association between plaque psoriasis and higher PASI scores compared to other types. Furthermore, there was a relation between type of psoriasis and functional disabilities. This finding is in the line with **Menter et al., (2019)** who assessed the effect of psoriasis on work productiveness and found that plaque psoriasis was associated with a significant reduction in work productivity.

Pertaining to psoriasis duration, the study result also revealed that the majority of the current study participants had disease between one to ten years ago. This was almost identical to the result of the study conducted by **El-komy et al., (2020),** who discovered that the average length of psoriasis was 8.8 years. According to researchers, this outcome may be because psoriasis is a chronic, long-lasting condition that needs ongoing monitoring and treatment. Furthermore, there was correlation between psoriasis duration and functional disabilities. This finding is consistent with earlier findings by **Aalemi, et al., (2022)** who found in their study a strong positive correlation between psoriasis duration and PDI scores in Afghan patients with psoriasis. The

factor that might contributed to this finding is participants who have psoriasis for longer tend to experience more functional limitations.

Concerning family history of psoriasis, the current study findings denoted that over half of participants didn't have family history of psoriasis, this finding is in line with **Mohamed and Attia (2022)** who documented that the majority of their participants didn't have family history of psoriasis. In addition, there weren't a correlation between family history of psoriasis and its severity and related functional disabilities.

In relation to the most common affected body parts, more than half of participants had psoriasis in elbow, knee and scalp. This finding is supported by **Ruggiero et al., (2022) and Sbidian et al., (2023)**. The possible factor that might contributed to this finding and was supported by the literature as well, is the fact that most common affected sites of psoriasis differ based on the type of psoriasis. Elbows and knees are commonly affected by plaque psoriasis **(Nast et al., 2021).**

Regarding co-morbidities, most participants in the study had other health problems on top of their psoriasis, such as diabetes, high blood pressure, heart disease, and psoriatic arthritis. This aligns with research by **Gisondi et al. (2020)**, who found that people with psoriasis are more likely to have certain additional health issues compared to the general population.

In relation to patients' Body Mass Index, the findings of current study displayed that more than one third of the current study participants were obese, also there was a correlation between BMI and psoriasis severity and related functional disabilities. This finding is verified by **Xu et al., (2021); Paroutoglou et al., (2020)** who studied the association of psoriasis and obesity and reported obesity is associated with metabolic changes like insulin resistance, which can worsen psoriasis. Lending support to this explanation what was reviewed in the literature that obesity contributes to chronic inflammation, which can exacerbate psoriasis severity, also psoriasis medications, like corticosteroids, can have weight gain side effects.

Concerning the severity of PASI, the study highlights a high prevalence of moderate to severe psoriasis, affecting more than three quarter of participants. This aligns with previous research conducted by **Khalid et al., (2021)**, where(57.7%) of their participants exhibited severe to very severe psoriasis based on PASI scores. On the other hand, **Nabil et al., (2023)** reported that about half of their participants were suffering from mild psoriasis.

Regarding the severity of PDI, the study findings indicated that more than half of participants were suffering from severe psoriasis disabilities. These findings are supported by **National Psoriasis Foundation, (2022),** that reported that 38% of their respondents with moderate-to-severe psoriasis reported experiencing work limitations due to their condition **Balak et al., (2022).**

In relation to the correlation between components of PDI and PASI scores, the current study findings reported a significant correlation between all components of PDI and PASI scores particularly the daily activities and work, which is consistent with previous studies conducted by **Zeng et al., (2022); Mirmiran, Moosaabadi, and Khayyat, (2020);** also is consistent with **Lee et al., (2020)** except for work. The researchers interpret these results in the light of individual differences in coping mechanisms and resilience that might influence how specific aspects of life are affected by psoriasis. In addition, cultural and societal factors could play a role in the impact of psoriasis on certain areas of life (e.g., work or relationships).

Concerning the correlation between total PDI and PASI scores, the current study found that total PDI scores had a positive high correlation with PASI score. Similar findings were also reported by **Hajar et al., (2022)** who reported a significant positive high correlation between PASI and PDI scores (r = 0.70), also they reported improvement in PASI scores led to a corresponding improvement in PDI scores. In addition, other studies conducted by **Zeng et al. (2022); Mirmiran et al., (2020)** reported a moderate positive correlation (r = 0.57 & r = 0.50) between total PDI and PASI scores. However, **Lee et al., (2020)** reported a weak positive correlation (r = 0.21) between total

PDI and PASI scores. On the other hand, **Singh et al., (2022)** reported in their study about "Relationship between Quality of Life and Disease Severity in Patients with Psoriasis in Different Body Regions" no significant correlation between PASI and PDI scores in patients with psoriasis affecting the scalp. However, a moderate correlation was found for psoriasis on other body regions.

Conclusion:

The present study was conducted to explore the relationship between psoriasis severity and functional disability among patients with psoriasis. A total of 150 clinically diagnosed patients with psoriasis for one to ten years ago, their mean age was 38.9±7.85 years. Majority of participants were male, had plaque type of psoriasis. The most common affected sites were elbow, knee, and scalp; more than one third of participants had severe psoriasis severity on PASI scale and more than half of them had severe functional disabilities on PDI scale. A positive high correlation was found between psoriasis severity and functional disability among the current study participants.

Recommendations/ Implications

Based on the current study findings, it is recommended to:

- Further studies to assess factors related to functional disabilities and psoriasis severity among patients with psoriasis
- Develop evidence-based guidelines for managing functional limitations in psoriasis patients.
- Advocate for increased access to comprehensive treatment plans that address both the physical and psychosocial aspects of the psoriasis
- Development of educational programs and support groups tailored to the specific needs of patients with varying degrees of psoriasis severity.
- Duplication of the study on a large sample size from different geographic areas to obtain more generalization.

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