



# MORTALITY AND ITS CAUSES AMONG ADULT PATIENTS WITH PSORIASIS IN MALAYSIA: EVIDENCE FROM THE MALAYSIAN PSORIASIS REGISTRY



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## BACKGROUND

Psoriasis is a common chronic dermatologic condition affecting approximately 1.5-3% of the population. Psoriasis has a known association with metabolic syndrome, such as obesity, hyperglycemia, dyslipidemia and hypertension. Other comorbidities associated with psoriasis include psoriatic arthritis, inflammatory bowel disease, psychiatric conditions, malignancies and chronic obstructive pulmonary disease.

## OBJECTIVE

To investigate the mortality rate, causes of death and risk factors of mortality among adult patients with psoriasis in Malaysia.

## METHOD

This was a retrospective study involving adult patients (above the age of 18 years) notified to the Malaysian Psoriasis Registry between July 2007 and December 2013. This registry is a centralized electronic database, where data is collected voluntarily from 22 participating centres nationwide. The list of patients obtained was cross-checked against the National Death Registry and the various causes of death among the deceased patients were analyzed.

## RESULTS

A total of 9775 patients were notified to the registry between July 2007 and December 2013, of which 419 deaths (4.3% of patients in the registry) were identified (313 males, 106 females). The mean age at demise was 60.2 ± 13.4 years.

Out of 419 deaths, 301 cases (71.8%) had reported causes of death. The common cause of death was infection (33.9%), closely followed by cardiovascular causes (33.6%) and malignancy (15.9%) (Figure 1).

The most common source of infection was the lungs (46.1% of infections). Five deaths (4.9% of infections) were linked to Human Immunodeficiency Virus infection.

The types of malignancies among the patients who died are listed in Table 1. Gastrointestinal malignancy was the commonest cause of malignancy-related death, and occurred in 25.0% of the patients.

Hypertension, diabetes mellitus, dyslipidemia, ischaemic heart disease and cerebrovascular disease were risk factors that were significantly associated with overall mortality among psoriasis patients (p<0.001) (Table 2).

After adjusting for confounding factors, 5 factors emerged as predictive factors of higher mortality in adult patients with psoriasis, namely age >40 years, age of onset of psoriasis >40 years, male gender, severe psoriasis with body surface area (BSA) >10% and presence of at least one cardiovascular co-morbidity (Table 3).

**Table 1** Types of malignancy-related death

Types of malignancy	n	%
Gastrointestinal	12	25.0
Lung	9	18.8
Breast	6	12.5
Lymphoma and leukaemia	5	10.4
Upper aerodigestive tract	3	6.3
Others	7	14.6
Unknown	6	12.5
Total	48	100.0

**Table 2** Cardiovascular Risk Factors in Patients with Psoriasis

Variables	Patient alive (n=9356)		Patient died (n=419)		Simple Logistic Regression		
	n	(%)	n	(%)	Crude OR	(95% CI)	P-value <sup>a</sup>
Hypertension	2103	22.5	179	42.7	2.59	(2.12, 3.17)	<0.001
Diabetes Mellitus	1406	15.0	150	35.8	3.14	(2.55, 3.87)	<0.001
Dyslipidemia	1406	15.0	108	25.8	1.97	(1.57, 2.47)	<0.001
Ischaemic heart disease	426	4.6	67	16.0	3.98	(3.01, 5.25)	<0.001
Cerebrovascular disease	107	1.1	25	6.0	5.47	(3.50, 8.56)	<0.001

<sup>a</sup> Result was based on available information. Percentage (%) was calculated based on number of cases over total number for each group (alive or dead). <sup>b</sup> Wald statistic.

**Table 3** Predictive Factors of Higher Mortality in Patients with Psoriasis

Variables	Patient alive		Patient died		Multiple Logistic Regression <sup>a</sup>		
	n	(%)	n	(%)	OR <sup>b</sup>	(95% CI)	P-value
1. Age:	18-40 years	3538 (37.8)	46 (11.0)	1.00	-	-	
	41-60 years	3621 (38.7)	168 (40.1)	2.70	(1.75, 4.18)	<0.001	
	> 60 years	1349 (14.4)	205 (48.9)	7.46	(4.62, 12.02)	<0.001	
2. Age of onset:	≤ 40 years (Type 1)	6317 (67.5)	145 (34.6)	1.00	-	-	
	≥ 40 years (Type 2)	2856 (30.5)	268 (64.0)	1.32	(1.00, 1.75)	0.049	
3. Gender:	Male	5162 (55.2)	313 (74.7)	1.72	(1.33, 2.22)	<0.001	
	Female	4194 (44.8)	106 (25.3)	1.00	-	-	
4. BSA involved:	≤ 10%	5118 (54.7)	234 (55.8)	1.00	-	-	
	> 10%	1696 (18.1)	103 (24.6)	1.52	(1.19, 1.96)	0.001	
5. Systemic therapy:	Yes	1698 (18.1)	102 (24.3)	2.83	(2.11, 3.79)	ns	
	No	7375 (78.8)	311 (74.2)	-	-	-	
6. Co-morbidity:	At least one	2905 (31.0)	251 (59.9)	1.67	(1.30, 2.14)	<0.001	
	None	6330 (67.7)	163 (38.9)	1.00	-	-	

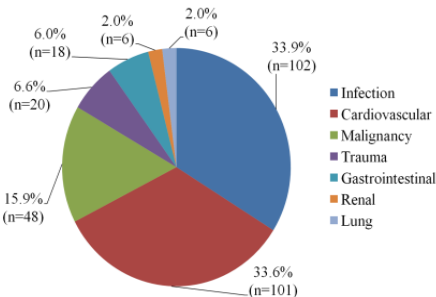
<sup>a</sup> Forward LR model was applied. <sup>b</sup> Adjusted OR.

## CONCLUSION

Predictive factors of higher mortality among adult patients with psoriasis include older age, age of onset >40 years, male gender, severe disease with BSA >10%, and the presence of cardiovascular co-morbidities. Although cardiovascular diseases are well-known to cause significant morbidity and mortality among patients with psoriasis, the role of infections and malignancy should not be overlooked. Control of comorbidities that may also increase the patients' risks of developing infections and tumors remain imperative in the approach towards the management of psoriasis.

## CONFLICT OF INTEREST & ACKNOWLEDGEMENT

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**Figure 1:** Causes of death in patients with psoriasis