



Published by DiscoverSys

Correlation between postherpetic neuralgia (PHN) patients' stress level and the quality of life of their families in Universitas Sumatera Utara Hospital



CrossMark

Finisia Angkasa^{1*}, Imam Budi Putra², Ariyati Yosi²

ABSTRACT

Background: Postherpetic neuralgia (PHN) is the most common complication seen in herpes zoster patients. Its clinical manifestations consist of persisting sharp pain even when the initial exanthema has disappeared. These patients experienced stress from the conditions and from the treatment process, which in turn affect their families' quality of life.

Patients and Methods: This study was an observational analytic study with a cross-sectional design involving 30 PHN patients and their families. Patients were required to fill out the Perceived Stress Scale (PSS-10) questionnaire to assess their stress levels. Their respective families were required to fill out the Family Dermatology Life Quality Index (FDLQI) questionnaire to assess their quality of life. Statistical analysis was performed on both data with the Spearman correlation test (data were not normally distributed). ANOVA test

was performed to assess the average difference between the stress levels experienced by PHN patients and the quality of life of their families.

Results: The families of PHN patients who experienced severe stress levels had worse or lower quality of life compared to the families of patients with moderate or mild stress levels. The lowest average score of quality of life is 27.20 (severe stress level) and the highest average score of quality of life is 14.33 (mild stress level).

Conclusions: The stress level of PHN patients was significantly related to the quality of life of their respective families in the aspects covered in the FDLQI questionnaire ($p < 0.005$). There was a significant difference in the family's quality of life score based on the patient's stress level ($p < 0.001$)

Keywords: postherpetic neuralgia, stress, quality of life, PSS-10, FDLQI

Cite this Article: Angkasa, F., Putra, I.B., Yosi, A. 2020. Correlation between postherpetic neuralgia (PHN) patients' stress level and the quality of life of their families in Universitas Sumatera Utara Hospital. *Bali Medical Journal* 9(3): 619-622. DOI: [10.15562/bmj.v9i3.1738](https://doi.org/10.15562/bmj.v9i3.1738)

¹Postgraduate Student of Dermatology and Venereology Department, Faculty of Medicine, Universitas Sumatera Utara, Medan, Indonesia

²Department of Dermatology and Venereology, Faculty of Medicine, Universitas Sumatera Utara, Medan, Indonesia

*Corresponding to:
Finisia Angkasa; Postgraduate Student of Dermatology and Venereology Department, Faculty of Medicine, Universitas Sumatera Utara, Medan, Indonesia;
finis.ang@gmail.com

Received: 2020-01-24
Accepted: 2020-09-08
Published: 2020-11-07

INTRODUCTION

Postherpetic neuralgia (PHN) is a clinical condition caused by reactivation of varicella-zoster virus.¹ It is the most common complication seen in herpes zoster (HZ), in which pain persists after the initial exanthema has gone.² PHN is characterized by neuropathic-type pain with sharp and distinct characteristics. Its quality has been described as burning, shooting and tingling in sensation or worse, allodynia, and hyperalgesia. The pain intensity tends to increase with age.⁴

Data collected from 13 teaching hospitals in Indonesia showed that 593 of 2,232 HZ patients (26.5%) developed PHN.⁵ Because of the debilitating pain, PHN patients are more prone to stress, physically, and psychologically.⁶ Stress experienced by the patients can be caused by the long-term pain or lack of support from their family members who acts as their caregivers during the healing period.⁷ Katz et al reported that 8 out of 20 HZ patients with PHN (40%) developed stress, while in HZ patients without PHN, only 6 out of 82 patients (7.3%) developed stress.⁸ Volpi et al also

stated that PHN causes 5.51 times higher anxiety level and 3.65 times greater stress compared to HZ patients without PHN.⁹

Stress experienced by PHN patients can, in turn, affect the quality of life of their family members, who act as caregivers.¹⁰ These caregivers play a big role in the recovery process, in which they are expected to support the patients physically and mentally to reduce their level of stress from the illness.¹¹ Often these caregivers spend more time caring for their sick family members than their own health, which subsequently affects their own quality of life—physically, psychologically and socially.¹² Factors contributing to the decrease in quality of life include emotional and financial burden as well as physical and psychological fatigue whilst taking care of their sick family members.¹³

METHODS

This study is a cross-sectional observational analytical study conducted in 30 PHN patients and their family members in Universitas Sumatera Utara Hospital from July 2019 to December 2019. Samples

were chosen consecutively. After obtaining written informed consent, PHN patients and their family members who act as the caregivers were required to fill out the PSS 10 and FDLQI questionnaires, respectively. Data collected were analyzed using the Spearman Rho correlation test to find out the correlation coefficient between numerical data and not normally distributed data. To assess the mean differences of stress level of PHN patients with the quality of life of their respective caregiving family members, we conducted an ANOVA test. This study has been approved by the Ethical Committee of Health Research, Faculty of Medicine, Universitas Sumatera Utara (No: 899/TGL/KEPK FK USU-RSUP HAM/2019).

RESULTS

In this study, we performed analysis of the stress level of PHN patients and the quality of life of their respective family members in the aspects of emotional pressure, physical fitness, interpersonal relationship, peer's reaction, social life, leisure activity and time consumed caring for patients, extra housework to be done, impact on their job/study and increase in the monthly household expenses.

From 30 PHN patients, there were 12 men and 18 women, with their family members of 11 men and 19 women. In this study, most PHN patients were in their late 60s (36.7 %) and most of the family members' age groups were between 35 to 39 years old. Most PHN patients were senior high school graduates (46.6 %) and most of their family members were also high school graduates (36.7%).

Most of the PHN and their family members were working in trades. Most of the family members are children of the PHN patients (56.7%) of whom have been caring for their sick parents for mostly 1–3 years (46.7%).

PHN patients' stress levels were assessed by using the PSS-10 questionnaire. There were 9 patients (30 %) with mild stress levels, 16 patients (53.3%) with moderate stress levels and 5 patients (16.7 %) with severe stress levels.

Table 1 showed that stress experienced by PHN patients correlates with the quality of life of their family members in emotional pressure, physical fitness, interpersonal relationship, peer's reaction, social life, leisure activity and time consumed caring for patients, extra housework to be done, impact on their job/study, and increase of monthly household expenses ($p < 0.005$).

By using the ANOVA test, this study showed significant mean differences between the quality of life of the family members ($p < 0.001$). Table 2 showed that the lowest mean quality of life score is in the severe stress level (27.20) but the highest mean quality of life score is in the mild stress level (14.33). It confirms the FDLQI questionnaire stating that the higher the score the more PHN influencing the quality of life of family members.

Mean differences among the average quality of life in respective family members were assessed using the Bonferroni test ($p < 0.001$). Spearman correlation test also showed that stress level in PHN patients correlates well with the respective caregiving family members in emotional pressure, physical fitness, interpersonal relationship, peer's reaction, social life, leisure activity and time consumed caring for patients, extra housework to be done, impact to their job/study, and increase of monthly household expenses, which showed a negative correlation meaning that the higher the stress level of PHN patients the lower the quality of life of their family members.

DISCUSSION

Our study found that the majority of PHN patients and their families were women, respectively 60% and 63.3 %. This percentage agrees with the study conducted by Mellaratna et al stating that more women experience PHN than men (56.7%).¹⁴ Munoz-Quiles et al stated that the incidence of PHN was twice as much as men.¹⁵ Schmidt-Ot et al also found that 63% of their PHN patients are women.¹⁶ A multicenter study conducted by Nahm et al found that 886 from 1412 patients were women. Basra et al stated that 62 % of their PHN subjects are women.¹⁷

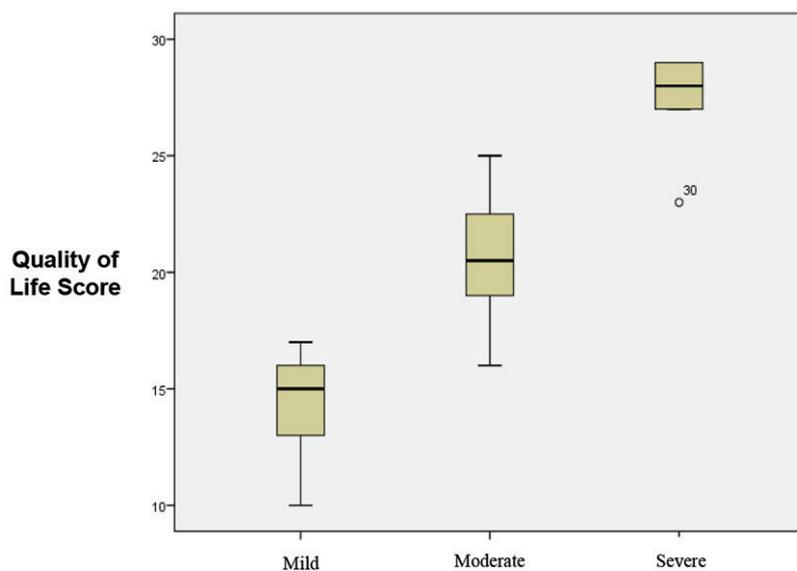
In this study, most PHN patients were in their late 60s (36.7%), with their respective caregivers

Table 1. Correlation of PHN patients' stress level with the quality of life of their family members

Quality of Life of Family Members	PHN Patients' Stress Level		
	<i>r</i>	<i>p</i>	Correlation
Emotional pressure	0.382	0.037	Negative
Physical fitness	0.181	0.339	Positive
Interpersonal relationship	0.260	0.166	Positive
Peer's reaction	0.532	0.003	Negative
Social life	0.422	0.020	Negative
Leisure activity	0.619	0.001	Negative
Time consumed caring for patients	0.562	0.001	Negative
Extra housework to be done	0.717	0.001	Negative
Impact on job/study	0.682	0.001	Negative
Increase of monthly household expenses	0.617	0.001	Negative

Table 2. Quality of life score

Quality of Life of Family Members	PHN Patients' Stress Level		
	Mild (n=9)	Moderate (n=16)	Severe (n=5)
Mean	14.33	20.63	27.20
SD	2.35	2.42	2.49
Min – Max	10–17	16–25	23–29
95% CI	12.53–16.14	19.34–21.91	24.11–30.29
p (Shapiro Wilk)	0.583	0.918	0.09

**Figure 1.** Boxplot graphic of quality of life score of PHN patients' family members based on PHN patients' stress level**Table 3.** Correlation between PHN patients' stress level and PHN patients' family quality of life based on each stress levels

Patients' Stress Level	Patients' Family Quality of Life (SD)	p	Post Hoc	
			Moderate	Severe
Mild	14.33 (2.35)	<0.001	<0.001	<0.001
Moderate	20.63 (2.42)			<0.001
Severe	27.20 (2.49)			

were in the range of 35 – 39 years old (33.3%). These results agree with Mellaratna et al, who found that the majority of their PHN patients were ≥ 60 years old (53.3%) in their study.¹⁴ Another study conducted by Munoz-Quiles et al stated that the risk of PHN increases twice as a person reaches 60 – 69 years old and even to thrice as much when they reach 70 – 79 years old. Patients older than 80 years old is 3.67 times more prone to PHN.¹⁵ Weaver also reported incidence of PHN were mostly in the age of 70 (73%), and followed by 60 (47%) and 55 (27%). 48% of those patients experienced pain for

more than 1 year.¹⁸ Nahm et al also stated that the average age of PHN patients was 66.2 ± 12.3 years old. Thomas et al also found that the mean age of PHN patients was 64.2 years old.¹⁹

This study found that most caregiving families were businessmen (33.3%) and most of PHN patients were retired (33.3%). These results agree with Mellaratna et al stating that PHN patients were retired (23.3%).¹⁴ Most caregiving family members are children of PHN patients (56.7%), followed by spouse (30%) and siblings (13.3%). Basra et al also found that wife/husband taking care of their spouse with PHN are the most common findings (45.5%), followed by children taking care of their parents with PHN (44.7%).²⁰ In this study, most of the patients were taken care of for 1–3 years (46.7%).

The stress level of most patients in this study is at a moderate level (53.3%), followed by mild (30%) and severe (16.7%). These findings correlate well with the FDLQI scoring system, in which the higher the FDLQI score, the more will PHN influence the quality of life of respective caregiving family members.¹⁶ As Hu et al stated, stress experienced by PHN patients correlates well with the quality of life of their respective caregiving family members.¹⁰ Basra et al also stated that in their study, stress level of PHN patients influences quality of life of patients' families, in which it increases emotional pressure, worsening health and personal relationship with the patient, negative reaction of other people to PHN patients, social life, decreasing leisure activity and time to take care of sick patients, extra homework to be done, distracted learning and working activity and increasing household expenses for PHN healthcare.²⁰

There is a limitation in our study. The stress can be caused by many factors. Not only because of the pain from the disease that affected the stress, but also other factors. However, these factors are not considered in our studies.

CONCLUSION

Through this study, we found that most PHN patients were female and in their late 60s. Most of them were senior high school graduates, who have experienced PHN for 1–3 years. Most PHN patients (53.3%) experienced moderate stress and the level of stress correlates well with their respective caregiving family members' quality of life in emotional pressure, physical fitness, interpersonal relationship, peer's reaction, social life, leisure activity and time consumed caring for patients, extra house chores to be done, impact to their job/study, and increase of monthly household expenses ($p < 0.005$). Severe stress level patients' family members experience the worst quality of life ($p < 0.001$).

ACKNOWLEDGMENTS

We would like to express the greatest gratitude for the Head of Department of Dermatology and Venereology of Faculty of Medicine Universitas Sumatera Utara and Universitas Sumatera Utara Hospital.

ABBREVIATIONS

HZ, Herpes Zoster; PHN, Postherpetic Neuralgia; PSS-10, Perceived Stress Scale-10; FDLQI, Family Dermatology Life Quality Index.

AUTHOR CONTRIBUTION

All authors have contributed to all processes in this research, including preparation, data gathering, and analysis, drafting and approval for publication of this manuscript.

FUNDING

The authors are responsible for all of the study funding without the involvement of grant or any external source of funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest regarding the publication of this article.

REFERENCES

- Oxman MN, Levin MJ, Johnson GR, Schmader KE, Straus SE, Gelb LD, et al. A Vaccine to Prevent Herpes Zoster and Post Herpetic Neuralgia in Older Adults. *N Engl J Med*. 2005; 352(22): 2271-84.
- Bartley J. Postherpetic Neuralgia, Schwann Cell Activation, and Vitamin D. *Med Hypotheses*. 2009; 73(6):927-9.
- Gilden DH, Kleinschmidt De Master BK, Laguardia JJ, Mahalingam R, Cohrs RJ. Neurologic Complication of The Reactivation Of Varicella-Zoster Virus. *N Engl J Med*. 2000; 342(9):635-45.
- Cipto H, Ismiarto SP. *Pengobatan Mutakhir Nyeri Paska Herpes*. Badan Penerbit FKUI. Jakarta. 2002: 19-37.
- Kelompok Studi Herpes Indonesia (KSHI). *Buku Panduan Herpes Zoster di Indonesia*. Badan Penerbit FKUI. Jakarta. 2014: 3-5.
- Dworkin RH, Banks SM. *A Vulnerability Diathesis Stress Model of Chronic Pain: Herpes Zoster and The Development of Post Herpetic Neuralgia*. The Guilford Press. New York. 2009; 247-269.
- Livengood JM. The Role of Stress in the Development of Herpes Zoster and Post Herpetic Neuralgia. *Curr Rev Pain*. 2000; 4(1):7-11.
- Katz J, McDermott MP, Cooper EM, Walther RR, Sweeney EW, Dworkin RH. Psychosocial Risk Factors for Post Herpetic Neuralgia: A Prospective Study of Patients With Herpes Zoster. *J Pain*. 2005; 6(12):782-90.
- Volpi A, Gatti A, Pica F, Bellino S, Marsella LT, Sabato AF. Clinical and Psychosocial Correlates of Post Herpetic Neuralgia. *J Med Virol*. 2008; 80(9):1646-52.
- Hu X, Summers JA, Turnbull A, Zuna N. The Quantitative Measurement of Family Quality of Life: A Review of Available Instruments. *J Intellect Disabil Res*. 2011; 55(12):1098-114
- Samuel PS, Rillotta F, Brown I. Review: The Development of Family Quality of Life Concepts and Measures. *Journal of Intellectual Disability Research*. *J Intellect Disabil Res*. 2012; 56(1):1-16.
- Rachel P, Jeremy K, Philip W, Helen M, Graham B, Christopher G. Quick, Simple Measures of Family Relationships for Use in Clinical Practice and Research; A Systematic Review. *Journal of Family Practice*. *Fam Pract*. 2011; 28(2):172-87.
- Poston D, Turnbull A, Park J, Mannan H, Marquis J, Wang M. Family Quality of Life: A Qualitative Inquiry. *Ment Retard*. 2003; 41(5):313-28.
- Mellaratna WP. *Pengaruh Intensitas Nyeri terhadap Kualitas Hidup Pasien Post Herpetic Neuralgia*. Fakultas Kedokteran Universitas Sumatera Utara, Medan. 2019: 48-63.
- Muñoz-Quiles C, López-Lacort M, Orrico-Sánchez A, Díez-Domingo J. Impact of postherpetic neuralgia: A six-year population-based analysis on people aged 50 years or older. *J Infect*. 2018; 77(2):131-6.
- Schmidt-Ott R, Schutter U, Simon J, Nautrup BP, van Krempelhuber A, Gopala K, et al. Incidence and costs of herpes zoster and postherpetic neuralgia in German adults aged ≥ 50 years: A prospective study. *J Infect*. 2018; 76(5): 475-82.
- Nahm FS, Kim SH, Kim HS, Shin JW, Yoo SH, Yoon MH, et al. Survey on the Treatment of Post Herpetic Neuralgia in Korea: Multicenter Study of 1,414 Patients. *Korean J Pain*. 2013; 26(1): 21-6.
- Weaver BA. The burden of herpes zoster and postherpetic neuralgia in the United States. *J Am Osteopath Assoc*. 2007;107(3 Suppl 1): S2-7.
- Weinke T, Glogger A, Bertrand I, Lukas K. The Societal Impact of Herpes Zoster and Post Herpetic Neuralgia on Patients, Life Partners, and Children on Patients in Germany. *ScientificWorldJournal*. 2014; 2014:1-8.
- Basra MK, Sue-Ho R, Finlay AY. The Family Dermatology Life Quality Index; Measuring The Secondary Impact of Skin Disease. *Br J Dermatol*. 2007; 156(3):528-38.



This work is licensed under a Creative Commons Attribution