Original Article

JHSMR Journal of Health Science and Medical Research

Social and Spiritual Aspects Affecting Psychosocial Well-Being Among Early- and Late-Stage Oral Cancer Patients Presenting with Restricted Oral Functioning

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Received 11 September 2025 ● Revised 27 October 2025 ● Accepted 6 November 2025 ● Published online 19 June 2026

Abstract:

Objective: There is increasing awareness of the diverse negative effects of cancer stage on the psychosocial well-being of patients with oral cancer. This study examined the role of social support and spiritual aspects in predicting psychosocial well-being among the early- and late-stage Malaysian oral cancer patients with restricted oral functioning, to inform a holistic model of cancer care.

Material and Methods: Secondary data analysis was performed based on a health-related quality of life dataset among 96 oral cancer patients, collected from the Functional-Assessment of Cancer-Therapy–Head and Neck, Version 4.0 instrument between 2008 and 2015. Descriptive analyses, including correlation, were performed, followed by a hierarchical multiple regression using Statistical Package for the Social Sciences (SPSS) Version 25.0.

Results: The multivariate analyses indicated moderate-strong relationships between the mean scores for oral functioning, social support, spiritual aspect, and psychosocial well-being among a cohort of both early (n=31) and late-stage (n=65) patients attending three visits: pre-treatment, 1 month, and 3 months post-treatment. However, only oral functioning and social support were found to be significant predictors of patients' psychosocial well-being; with social support being the most significant predictor for both groups. In addition, social support was a mediator of oral functioning at pre-treatment among the late-stage group.

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J Health Sci Med Res 2027;45(1):e20261366
doi: 10.31584/jhsmr.20261366
www.jhsmr.org

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Conclusion: These findings provide insights into how social support and spiritual aspects can contribute to improved psychosocial well-being among patients with compromised oral functioning. The results could potentially outline new provisions for a better holistic care model for oral cancer patients in Malaysia.

Keywords: cancer staging, oral cancer, psychosocial well-being, social support, spiritual well-being

Introduction

Oral cancer (OC) (ICD-11 codes 2B6E.0)[1] is a major public health problem globally[2], especially in the Asian continent[2]. According to the recent GLOBOCAN 2020 report, lip-oral cavity cancer is the sixteenth and eighteenth most common cancer in the world[3] and Malaysia,[4] respectively.

The oral cavity performs vital functions for an individual, including chewing, swallowing, and speech[5]. Hindrances to eating and speaking have become a paramount concern in OC treatment as they affect a broad spectrum of patients' social, family, and work-related roles, and subsequently, their psychosocial well-being[6]. Therefore, there is a need to understand and provide supportive care that addresses these patients' expectations and needs in order to enhance patients' health-related quality of life (HRQoL) when fighting and surviving oral cancer.

Studies have shown that social relationships are an important factor of psychosocial well-being that patients can access in times of need and have significant meaning for cancer patients in general[7]. It has a positive effect on one's physical and emotional health by satisfying their basic social requirements, such as love, affection, self-esteem, and sense of belonging[7]. An increased spiritual well-being is able to assist cancer patients in re-evaluating their life goals, priorities, and meaning[8]. It not only nurtures one's life purpose but also decreases any psychological and physical limitations he or she has experienced[7,8]. Therefore, the influence of social factors on an individual's spiritual aspect is a crucial element when addressing the psychosocial impact of oral health, and strongly correlates with various health benefits, such as increased coping skills and higher HRQoL[8].

Studies have argued that one of the main influences impacting HRQoL among oral cancer patients is the disease stage at presentation[9]. Tumour, node and metastasis (TNM: clinical staging of cancer) stages I and II are commonly classified as early-stage groups; whereas TNM stages III or IV are classified as advanced or late-stage groups[10]. Clinicians and researchers have used the TNM system in staging cancers to address the extent of the tumour[11]. The early-stage presentation generally indicates that the disease is more localised or contained. In contrast, late-stage refers to cancers that have spread to other areas of the body[12]. Patients presenting symptoms at late stages have poorer HRQoL and a worse prognosis than those who presented with symptoms at an early stage[13].

There are different treatment modalities depending on the stage of the disease[14]; early-stage cancers are more likely to be successfully treated than later-stage OC patients[10,15]. As recommended by today's best clinical practices[16], surgical intervention is considered the best treatment modality for early-stage patients. Conversely, most late-stage patients are treated with a combination of surgery and chemotherapy or radiotherapy[13]. Consequently, late-stage diagnosis is associated with greater disadvantages, as the required chemotherapy and radiotherapy treatments increase the financial burden on families16 and are accompanied by physical limitations and negative psychosocial consequences that diminish HRQoL, with these effects further aggravated by treatment-related side effects[17].

Studies have also noted that late-stage patients who failed to attend subsequent visits were those who often had only received chemotherapy, either with or without radiotherapy, instead of surgery alone for their treatment modality[13]. In this context, chemotherapy and radiotherapy are generally associated with a greater negative impact on patients' HRQoL compared to surgery, particularly due to a higher symptom burden[18].

The current management strategies for oral cancer patients have largely focused on providing clinical care, with little emphasis given to other aspects, for example, providing supportive care. Given that the oral cavity and its related structures have an important functional and social role[19], integrating both clinical intervention and supportive care is critical to meet the psychological needs of oral cancer patients[20,21]. This is particularly significant, as both the disease itself and the side effects of various treatment modalities have been shown to negatively affect patients' HRQoL, with long-term implications for their psychosocial well-being, prognosis, and overall survival. This is especially the case as the disease itself and the side effects of different treatment modalities have been reported to impact HRQoL negatively regarding patients' psychosocial well-being, prognosis, and survival over time[9]. As such, this study aimed to examine the role of social support (SS) and the spiritual aspect (SA) in addressing psychosocial well-being (PSWB) among the early- and late-stage Malaysian oral cancer patients with restricted oral functioning (OF), to inform a holistic and supportive cancer care model.

Material and Methods

This study presented the secondary data analysis of a 3-month longitudinal study on a cohort of patients diagnosed with oral cancer between 2008 and 2015[13]. The dataset was obtained from the Malaysian Oral Cancer Database and Tissue Bank System (MOCDTBS)[22] at the Oral Cancer Research and Coordinating Center, University of Malaya. Ethics approval for the research was obtained from the Medical Ethics Committee, Faculty of Dentistry, UM (Reference number: DF CO2001/0004 (L).

The HRQoL domains of OF, SS, and SA were assessed for their potential relationship with PSWB at three different visits: baseline (pre-treatment), one month post-treatment, and 3 months post-treatment based on the staging groups (early- and late-stage). This was done to evaluate the potential change in the relationship between exposure (predictors) and outcome (criterion) among the patients across time at these three different visits.

Primary data collection

The dataset retrieved from the MOCDTBS was the HRQoL data collected using a validated instrument, called the Functional Assessment of Cancer Therapy–Head and Neck (FACT-H&N) Version 4.0[23]. The instrument consists of five sub-scales: physical well-being (GP), Social Well-being (GS), Emotional Well-being (GE), Functional Well-being (GF), and the Head and Neck sub-scale[24]. In addition, it also includes a cross-culturally adapted Malaysian version with added questions (MAQ), as a supplementary sub-scale to cater to the Malaysian population.

The respondents were asked to respond to the questions based on their experience 7 days prior to the data collection, while the baseline data were collected within 1–2 weeks after their diagnosis. The instruments were designed in English and Malay to accommodate the comprehension of the participants, as these two languages were identified as the most frequently spoken languages within the Malaysian population[13, 23].

Domains

The items from the different subscales in the FACT-H&N version 4.0 and the Malaysian Supplementary Questions[23] were referenced to denote the three predictor and one criterion domains in this study. For the predictor

domains, seven items from the Head & Neck sub-scale and one item from the Malaysian Supplementary Questions subscale represent Oral Functioning (OF). All seven items from the Social Well-being subscale reflect Social Support (SS), while one spiritual item from the Malaysian Supplementary Questions subscale captures the Spiritual Aspect (SA). The criterion domain, Psychosocial Well-being (PSWB), is represented by 13 items derived from the FACT-H&N Social and Emotional Well-being subscales.

A series of discussions with a content expert was conducted before commencing the analyses, including reviewing literature[8] and analysing items based on whether they are positive or negative statements for the purpose of the scoring procedure. This was followed by the internal reliability of the sub-scales to ensure good reliability items were selected for the new sub-scales. The respondents were instructed to rank each item using the ordinal scores of 0 (not true at all), 1 (somewhat true), 2 (quite true), 3 (true), and 4 (very true). The internal consistency of the questionnaire items was acceptable, with Cronbach's alpha values ranging from 0.711 to 0.853. There is a recommended scoring guideline produced for the FACT-H&N Version 4.0 to calculate the total score. Reversed scoring was also performed on the negative statements before summing the individual items to ensure all scores were equivalent in direction and positive statements. In this regard, a higher score indicates a better QoL.

Due to the high attrition rate, a cohort of 96 (earlystage n=31, late-stage n=65) patients was included in this study to examine and predict the follow-up relationship between these variables; instead of the 317 eligible patients initially recruited into this study.

Data analysis

All statistical analyses were performed using Statistical Package for the Social Sciences (SPSS) Version 25.0 software. Descriptive analysis was first undertaken to describe the sample characteristics based on the HRQoL sub-scales. This was followed by conducting correlation and hierarchical multiple regression tests to determine SS and SA's roles in explaining the relationship of interest between OF and PSWB. A two-stage hierarchical multiple regression was conducted to investigate the extent to which OF, SS, and SA predicted PSWB. OF and SS were entered as the main predictors at step 1 of the regression test to observe their effects on PSWB. Next, SA was entered at step 2 to investigate the influence of SA on these relationships.

Before conducting the hierarchical multiple regression, several assumptions of the statistical analysis were tested. The sample sizes of 31 for the early-stage and 65 for the late-stage were deemed adequate based on the three independent variables included in the analysis. The formula of $N > 31+3m$ (where m is the number of independent variables) was used based on the power analysis and the new rule-of-thumb tables[25]. The correlation tests (Tables 1 and 3) revealed that some independent variables were highly correlated, and the collinearity tests indicated that the data met the assumption of no multicollinearity[26]. Furthermore, the data met the assumption of the Durbin-Watson test for independent errors. An analysis of the standard residuals was also carried out, and it was found that the data contained no outliers. Finally, the residual and scatter plots indicated that the assumptions of linearity and homogeneity were all satisfactory[26].

Results

A total of 96 patients were included in this study. Most respondents were within the age range of 50-64 years (41.7%), with an average age of 58.79 (SD=14.8). The majority were female (60.4%), of Indian ethnicity (38.5%), with a primary educational background (51.0%), and married (61.5%).

Variations in sample characteristics were noted according to cancer stage and treatment groups by age. For patients 64 years old and below, most of them presented with late-stage disease (66.1%) and were treated with a

combination of surgery+chemotherapy and/or radiotherapy (combined treatment modalities) (43.5%). Those who presented with early stage disease under this age group were mostly treated with surgery only (61.9%). Among the cohort of patients over 64 years old (35.4%), the majority were treated with combined treatments (44.1%) regardless of whether their cancer staging was early- (29.4%) or late-stage (70.6%).

The correlation matrix in the early stage

As shown in Table 1, Pearson's correlations were computed to investigate the extent to which OF, SS, and SA correlated with PSWB among early-stage oral cancer patients at every visit. It was found that OF and PSWB showed a weak-to-moderate, positive, and significant correlation across three visits. Whereas a strong, positive, and significant correlation was observed between SS and PSWB across these visits. In contrast, SA demonstrated a weak but significant correlation with PSWB only at the first review visit among early-stage oral cancer patients.

The regression analysis between the role of SS and SA on the relationship of interest

At baseline, the hierarchical multiple regression revealed that at step 1, OF and SS contributed significantly to the regression model (F (2, 28)=32.159, p-value<0.001). The relationship between variables was strong (R = 0.835) and accounted for approximately 69.7% (ΔR^2=67.5%) of the variance in the PSWB mean score (Table 2). Only SS had a statistically significant impact on PSWB at baseline.

The effect of OF became non-statistically significant in step 1 of the model after SS was added. Initial analysis indicated there was a positive and moderate association between the changes in OF and PSWB scores at baseline [F (1, 29)=5.394, p-value<0.001)]. Given that OF was not statistically significantly correlated to the SS (Table 1), the SS did not mediate the relationship between OF and PSWB, but acted as a predictor for PSWB at baseline (Figure 1 (a).

Adding SA in step 2 of the regression model accounted for an additional 0.01% of variation in PSWB

Table 1 The correlation matrix between oral functioning (OF), social support (SS), spiritual aspect (SA), and psychosocial well-being (PSWB) across three visits among a cohort of OC patients (early stage; n=31 and late stage; n=65)

Visits	Variables	Early stage	Late stage	Early stage	Late stage	Early stage	Late stage	Early stage	Late stage
		PSWB		OF		SS		SA	
Baseline	PSWB			0.396*	0.345**	0.812**	0.717**	-0.139	0.200
	OF					0.256	0.316*	0.160	0.304*
	SS							-0.191	-0.066
	SA								
1st Review (1 month)	PSWB			0.582**	0.530**	0.740**	0.739**	0.396*	0.189
	OF					0.480**	0.324**	0.500**	0.342**
	SS							0.451*	0.104
	SA								
2nd Review (3 months)	PSWB			0.336	0.517**	0.704**	0.744**	-0.148	0.086
	OF					0.112	0.240*	0.314	0.335**
	SS							-0.037	-0.087
	SA								

p-value<0.05, **p-value<0.001

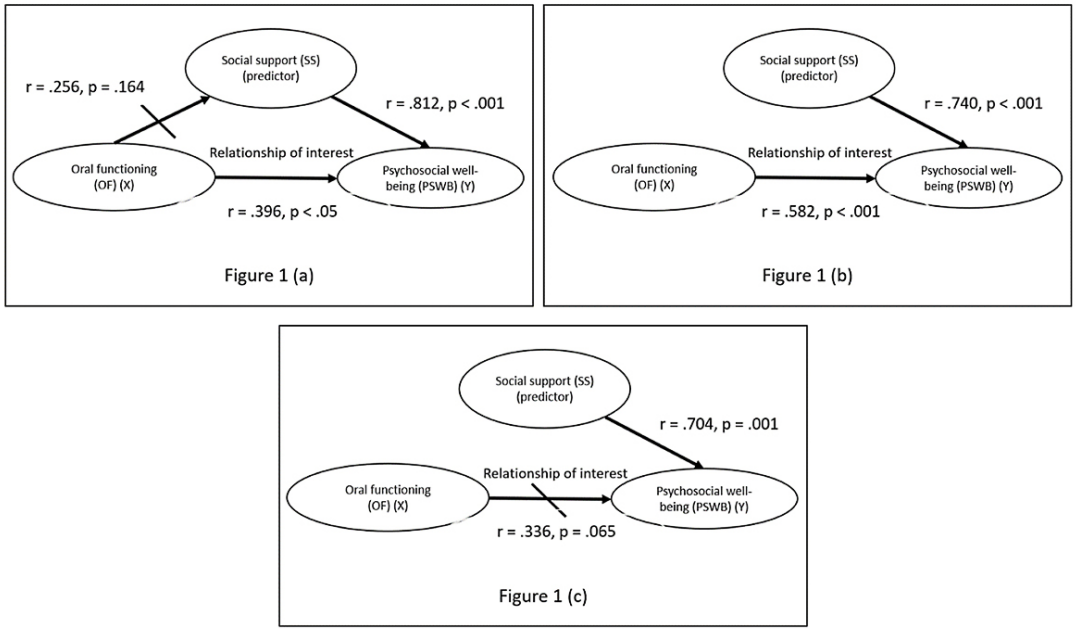


Figure 1 Social support and oral functioning as predictors of psychosocial well-being at baseline [1 (a)], first [1 (b)], and second review [1 (c)] visits (early stage)

(ΔR^2=66.4%), and this change in R^2 was significant (F (3, 27)=20.743, p-value<0.001) (Table 2). The relationship between these variables was also strong (R=0.835). Given that SA was neither significantly nor partially correlated with PSWB (Table 1), SA was not a predictor for PSWB at baseline.

In conclusion, both SS and OF were significant predictors of PSWB. It was also found that the strongest predictor at baseline was SS (β=0.753, t (31)=6.670, p-value<0.001), and SS did not mediate the relationship between OF and PSWB. A summary of this relationship is presented in Figure 1 (a).

At the first review visit, OF and SS contributed significantly to the regression model and had a statistically significant impact on PSWB at step 1 (Table 2). After SA was added in step 2, both the SS and OF remained as significant predictors of PSWB. In this regard, the strongest predictor was SS (Table 2), while SA was not statistically significant as a predictor of PSWB. Thus, both SS and OF were significant predictors of PSWB. A summary of these relationships can be found in Figure 1 (b).

During the second review visits, given that OF was not statistically significantly correlated with PSWB (Table 1) and SA was not statistically significant to PSWB, as presented in Table 2, neither OF nor SA was a predictor of PSWB. Hence, this observation implies that SS was the only predictor of PSWB, as presented in Figure 1 (c).

The correlation matrix in the late stage

Table 1 shows the correlation between OF, SS, and SA with PSWB among late-stage oral cancer patients. OF and PSWB showed a moderate, positive, and significant correlation. Whereas a strong, positive, and significant correlation was observed between SS and PSWB across

Table 2 The hierarchical regression analysis between the role of social support and spiritual aspect on the relationship of interest across three visits among a cohort of OC patients (early stage) (n=31)

Visits	Independent Variables	Step 1 (exclusion of SA)							
		Unstandardized Coefficient		Standardized Coefficients		p-value	R	R^2	Adjust R^2
		B	SE B (std. Error)	β	t				
Baseline	Oral functioning	0.269	0.144	0.201	1.87	0.072	*0.835	0.697	0.675
	Social support	1.131	0.16	0.76	7.06	***0.001**			
	Spiritual aspect								
1st Review	Oral functioning	0.279	0.126	0.295	2.205	***0.036**	0.784*	0.615	0.588
	Social support	0.856	0.191	0.599	4.484	***0.001**			
	Spiritual aspect								
2nd Review	Oral functioning	0.266	0.129	0.261	2.07	***0.048**	*0.750	0.562	0.531
	Social support	1.023	0.191	0.674	5.359	***0.001**			
	Spiritual aspect								
Visits	**Independent Variables**	**Step 2 (inclusion of SA)**							
		Unstandardized Coefficient		Standardized Coefficients		p-value	R	R^2	Adjust R^2
		B	SE B (std. Error)	β	t				
Baseline	Oral functioning	0.278	0.15	0.208	1.848	0.076	*0.835	0.697	0.664
	Social support	1.12	0.168	0.753	6.67	*0.001			
	Spiritual aspect	−0.135	0.536	−0.028	−0.252	0.803			
1st Review	Oral functioning	0.289	0.138	0.306	2.099	*0.045	*0.785	0.616	0.573
	Social support	0.868	0.202	0.608	4.293	*0.001			
	Spiritual aspect	−0.123	0.567	−0.031	−0.217	0.83			
2nd Review	Oral functioning	0.342	0.131	0.335	2.617	*0.014	*0.781	0.609	0.566
	Social support	0.998	0.184	0.658	5.418	*0.001			
	Spiritual aspect	−0.953	0.528	−0.229	−1.805	0.082			

*Significance level at 0.05, *Dependent variables and residuals are assumed to be normally distributed., *Scattered plot within ±3 [data is homoscedastic]; *Tolerance>0.2; VIF values <5 [no multicollinearity]., *Relationship of interest: OF and PSWB

three visits. In contrast, SA demonstrated a positive but very weak and non-significant correlation with PSWB across all visits.

The regression analysis between the role of SS and SA on the relationship of interest: The mediating effect of SS at baseline (late stage)

At baseline, the hierarchical multiple regression revealed that at step 1, OF and SS contributed significantly to the regression model ($F(2, 62) = 34.923$, p-value<0.001). The relationship between variables was strong ($R = 0.728$) and accounted for approximately 53.0% (ΔR^2=51.5%) of the variance in PSWB mean scores (Table 3). Only SS had a statistically significant impact on PSWB at baseline.

The effect of OF became non-statistically significant in step 1 of the model after SS was added. Initial analysis indicated a positive, moderate association between OF and

PSWB scores at baseline [F (1, 63) = 8.525, p-value<0.001]. Given that OF was significantly correlated to the SS (Table 1), SS mediated the relationship between OF and PSWB, as well as acting as a predictor of PSWB (Figure 2).

Adding SA in step 2 of the regression model accounted for an additional 4.8% of variation in PSWB (ΔR^2=55.7%), and this change in R^2 was significant (F (3, 61)=27.805, p-value<0.001); SA appeared to be significant at baseline visit (Table 3). The relationship between these variables was also strong (R=0.760). Given that SA was neither significantly nor partially correlated with PSWB (Table 1), SA was not a predictor for PSWB at baseline.

In conclusion, both SS and OF were significant predictors of PSWB. It was also found that the strongest predictor at baseline was SS (β=0.718, t (65)=8.047, p-value<0.001), and SS mediated the relationship between OF and PSWB. A summary of this relationship is presented in Figure 2.

The regression analysis between the role of SS and SA on the relationship of interest at first and second review visits (late stage)

On both the first and second review visits, OF and SS contributed significantly to the regression model and had a statistically significant and correlated impact on PSWB at step 1 (Tables 1 and 3). After adding SA in step 2, both the SS and OF remained as significant predictors of PSWB, in which SA appeared to be significant on the second review visit. Given that SA was not statistically correlated to PSWB (Table 1), SA was not a predictor for PSWB at both visits. It was also found that the strongest predictor at both visits was SS. A summary of these relationships can be found in Figure 3.

Discussion

This is the first study to evaluate SS and SA's role in the association of interest between OF and PSWB based on the cancer staging of patients diagnosed with oral cancer using multiple linear regressions. The findings indicate the potential role of SS and SA as predictors of improved PSWB among oral cancer patients in the pre- and post-treatment phases.

This study found that there were moderate to strong relationships OF, SS, SA, and PSWB for both early- and late-stage oral cancer patients in Malaysia across three visits, suggesting the importance of integrating support care in the management of oral cancer patients.

SS, especially from the family, is a crucial factor of PSWB[6,8], regardless of the patient's cancer staging

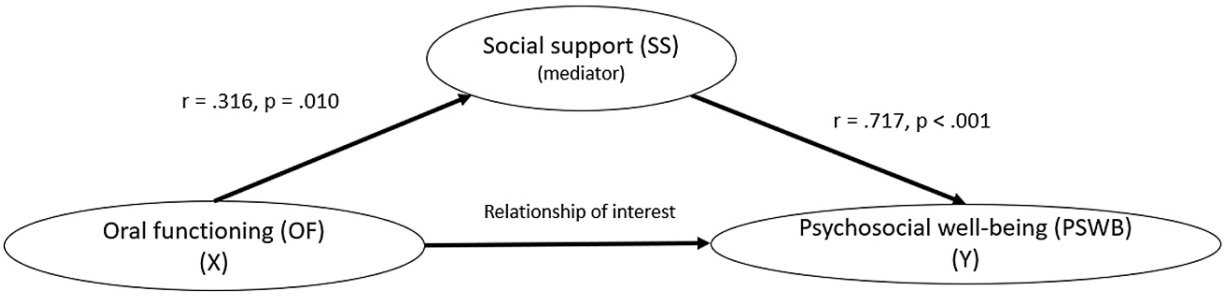


Figure 2 Social support mediating the relationship of interest between oral functioning and psychosocial well-being at baseline (late stage)

Table 3 The hierarchical regression analysis between the role of social support and spiritual aspect on the relationship of interest across three visits among a cohort of OC patients (late stage) (n=65)

Visits	Independent Variables	Step 1							
		Unstandardized Coefficient		Standardized Coefficients		p-value	R	R^2	Adjust R^2
		B	SE B (std. Error)	β	t				
Baseline	Oral functioning	0.145	0.101	0.132	1.433	0.157	*0.728	0.53	0.515
	Social support	1.006	0.137	0.675	7.357	*0.001			
	Spiritual aspect								
1st Review	Oral functioning	0.357	0.088	0.325	4.039	*0.001	*0.800	0.64	0.629
	Social support	0.917	0.117	0.633	7.869	*0.001			
	Spiritual aspect								
2nd Review	Oral functioning	0.441	0.085	0.386	5.169	*0.001	*0.818	0.669	0.658
	Social support	1.001	0.115	0.648	8.677	*0.001			
	Spiritual aspect								
Visits	**Independent Variables**	**Step 2**							
		Unstandardized Coefficient		Standardized Coefficients		p-value	R	R^2	Adjust R^2
		B	SE B (std. Error)	β	t				
Baseline	Oral functioning	0.052	0.103	0.047	0.506	0.615	*0.760	0.578	0.557
	Social support	1.068	0.133	0.718	8.047	*0.001			
	Spiritual aspect	1.348	0.513	0.233	2.629	*0.011			
1st Review	Oral functioning	0.352	0.094	0.32	3.73	*0.001	*0.800	0.641	0.623
	Social support	0.917	0.117	0.634	7.808	*0.001			
	Spiritual aspect	0.081	0.471	0.014	0.171	0.865			
2nd Review	Oral functioning	0.365	0.091	0.32	4.028	*0.001	*0.831	0.69	0.675
	Social support	1.051	0.115	0.68	9.145	*0.001			
	Spiritual aspect	0.888	0.427	0.163	2.08	*0.042			

*Significance level at 0.05

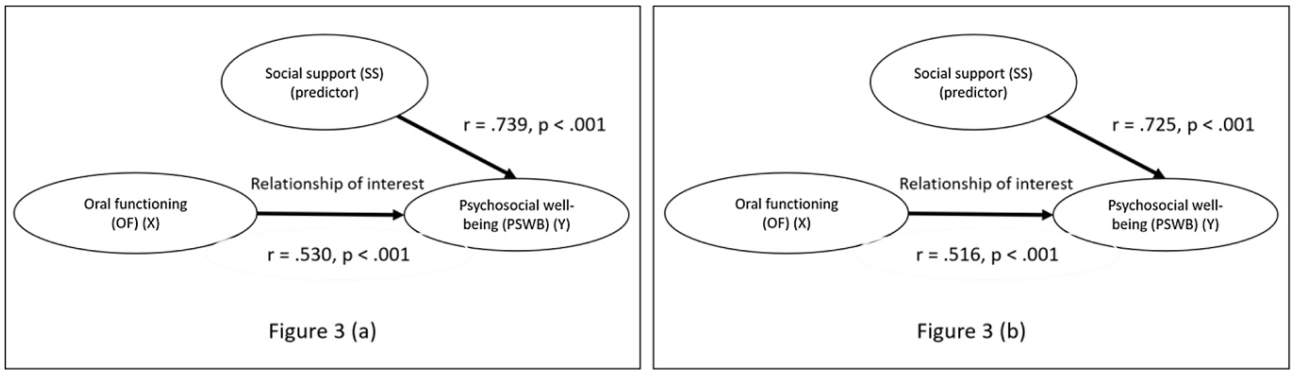


Figure 3 Social support and oral functioning as predictors of psychosocial well-being at first [3 (a)] and second review visits [3 (b)] (late stage)

status. This is because patients with good family support tend to feel loved and valued[27] and perceive a sense of belonging[28]. They know that family is a part of the social network that they can access and rely on in times of need, which significantly improves their emotions and positively boosts their psychological well-being[6]. Moreover, SS, being a strong predictor for PSWB in this study, could be attributed to the close-knit support systems provided by family, relatives, and friends, which is an inherent characteristic deeply rooted in Asian culture, and may differ from the norms observed in other cultural contexts[29].

SS is believed to provide a direct and positive effect on the patients' emotional health[30]. The influence of social factors on an individual's mind or behaviour indirectly improves their internal spirit[31] and should be considered in addressing the psychosocial needs of cancer patients. In this way, SS may mask the impact of SA and act as an important supportive factor of PSWB, regardless of cancer staging. In 2007[32], Falagas et al. reported that SS is one of the parameters which is significantly correlated with psychosocial variables. In this sense, SS does not act in isolation, but with other predictors of PSWB, such as spiritual enhancement and a well-functioning oral cavity among respondents. In addition, SS mediates the enhancement of OF as observed among patients in the late-stage groups.

It is well-recognised that limitations in the ability to eat and speak are major concerns, as such restrictions can indirectly impact the patients' family, occupational roles, and responsibilities, thereby affecting their PSWB[6]. Consequently, restoring and improving OF is an important aspect of care. However, in this study cohort of early-stage patients, OF appeared to have a less significant impact on PSWB during the follow-up visits. This finding aligns with previous studies, which reported that improvements in OF did not significantly influence PSWB at subsequent assessments[33]. A likely explanation is that early-stage patients tend to have a more favourable prognosis and experience fewer disruptions to normal function compared to those diagnosed at later stages[13].

Conversely, improvement in OF among late-stage patients was found to be mediated by SS at baseline. This is not surprising considering that late-stage cancer patients require more psychosocial and emotional support from caregivers, healthcare providers, and support facilitators[34]. There is much evidence on the protective and mediator effects of SS on cancer morbidity and mortality, mostly derived from studies conducted in North America and Europe[28]. SS is reported to significantly help patients cope with their cancer diagnoses by reducing their discomfort and increasing their coping skills[35]. This explains the mediator role of SS on OF at pre-treatment among the late-stage group in this study, despite their restricted capabilities to eat and speak[6].

The mediator effect of SS on OF among early-stage patients was nevertheless not demonstrated in this study population. This is probably because patients at the early stage have a better prognosis and often normal oral function, and thus they are able to better adjust positively to the impact of the disease and treatment[13]. One of the main influences on oral cancer patients' HRQoL is their disease stage at presentation. Patients presenting with symptoms at early stages have been shown to have better HRQoL with a higher chance of reverting to a normal prognosis at subsequent visits than patients with late-stage symptoms receiving combined treatment modalities[13].

These findings suggest that improvements in physical functioning do not significantly influence patients' PSWB, particularly at follow-up visits[33]. This was observed even among early-stage patients during the pre-treatment phase, despite limitations in eating and speaking that could disrupt their social and work-related roles and responsibilities, thereby impacting their PSWB[6]. This phenomenon is likely due to the substantial social support and spiritual resources available to these patients, which play a crucial role in

meeting their psychosocial needs and helping them cope with their cancer diagnosis[28].

This study highlights the important role of social support and spirituality in improving psychosocial well-being among oral cancer patients, even before treatment begins. Consistent with previous research, these supports should be integrated into existing therapies to enhance social integration and boost patients' resilience against illness[36], increase the survival chances[37] and ultimately enhancing overall HRQoL. Furthermore, family counselling and peer support can help patients and families cope with the disease and treatment impact, complemented by some spiritual aspects. The integrated approaches of communicable social support and spiritual-based activities would enable patients to feel a sense of belonging, acceptance, and connection to their loved ones and others. These aspects are crucial in managing patients with high unmet psychosocial needs.

Strengths and Limitations

This study utilized the cross-culturally validated FACT-H&N V.4.0 instrument, supplemented with locally relevant questions[23], to assess oral cancer patients' HRQoL and facilitate meaningful comparisons. Multiple linear regression analysis was employed to capture the complex and dynamic nature of health issues holistically, specifically examining various HRQoL parameters within this population. Unlike simple linear regression, multiple linear regression enables the systematic inclusion or exclusion of predictor variables in the model[38].

Several limitations should be considered when interpreting the findings of this study. First, the majority of participants across the three visits were elderly and physically fragile, with a high dependence on caregivers. As a result, the study experienced a notably high attrition rate[7]. Besides, the questionnaire might have been too complex and lengthy for most respondents who had low educational levels. Utilisation of simpler questionnaires or an interview would be a good alternative.

Furthermore, for the spiritual domain, only one sub-item of MAQ (item No.1) was referenced to address this study's aim. PSWB measurement may have been compromised as it is mostly made up of items in the SS domain, predicting itself to some extent. There is a need to regularly review and update research findings, as patients may perceive their HRQoL differently over time due to potential response shift effects[39].

Conclusion

The findings highlight the potential and positive influence of social support from family members, caregivers, and friends, as well as spiritual aspects, in enhancing PSWB for early- and late-stage oral cancer patients with restricted oral functioning. Thus, this study emphasises the need for a concerted effort to integrate these elements into oral cancer patient management to ensure optimal outcomes and improved quality of life for patients living with and attempting to survive cancer. Further research is needed in the form of a mediation analysis to verify the indirect effects between these studied variables.

Patient consent

Not applicable.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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