Original Article

Awareness, knowledge, and practice of performance status scale in the management of head and neck cancer patients among health-care providers in Edo state, Nigeria

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ABSTRACT

Objectives: The roles of performance status scales (PSSs) are well-documented globally and is largely, routinely, and traditionally used in the management of cancer patients in the developed countries, but this is not true in developing countries, reason largely due to lack of awareness. Therefore, the present study aimed to assess the level of awareness, knowledge, and practice of PSSs among medical practitioners in Edo state Nigeria.

Material and Methods: This descriptive cross-sectional study design recruited all medical practitioners that managed head and neck cancers (HNCs) (Family Dental Physicians, Otolaryngologist and Oral and Maxillofacial Surgeons) in Edo state between April 2019 and December 2019. Data were obtained using a self-administered questionnaire which was given to all the participants that gave written informed consent. The statistical analysis was done using the Statistical Package for the Social Sciences version 21 (IBM, Chicago, Illinois, USA).

Results: One hundred and six of the 110 randomly distributed questionnaires were retrieved, given a response rate of 96.4%. The male-to-female ratio was 2.4:1.0. The mean age was 33.3 ± 5.30 years, ranging from 25 to 46 years. Most of the respondents were within the age range of 31–40 years, while the least numbers were over 40 years. Of the total 106 respondents, less than half (46.2%) had heard of PSS. More than two-third (73.6%) of the respondents had a general poor knowledge regarding PSS. More than half (53.8%) of the respondents answered that they have never used PSS in the course of managing HNC patient. The age, gender, years of practice, type of specialty, and location of practice were not related to the knowledge of PSS by the respondents ($P > 0.05$). There was a significant association between awareness of PSS before this study and the knowledge of PSS among the respondents ($P = 0.02$).

Conclusion: Most Medical Practitioners that manage head and neck cancer patients lack awareness and knowledge of PSSs and hence are poorly utilized in the management of patients in routine practice.

Keywords: Awareness, Practice, Performance status scale, Medical practitioners

INTRODUCTION

Head and neck cancer (HNC) is a malignant neoplasm of oral cavity, oropharynx, larynx, and hypopharynx.[1] The annual incidence of HNCs worldwide is more than 550,000 cases with around 300,000 deaths each year.[2] Male-to-female ratio ranges from 2:1 to 4:1. About 90% of all HNCs are squamous cell carcinomas (HNSCCs). HNSCC is the sixth leading

cancer by incidence worldwide.[3] Management of HNC is multidisciplinary involving the Family Dental Physicians, Oral and Maxillofacial Surgeons, Otorhinolaryngologist, and Nutritionists as well as Oncologists.[4]

Performance status (PS) is a measure of how well a person is able to carry on ordinary daily activities while living with cancer and provides an estimate of what treatments a person may tolerate.[5] PS is important in the overall care and management of anyone living with cancer. Understanding how well someone will do with treatment depends on the type of cancer, the stage of cancer, and also on a person's general health and ability to manage their care.[6] There are several roles of PS scale (PSS). First, to determine if someone is in reasonable health to tolerate treatments such as chemotherapy, surgery, or radiation therapy. With all cancer treatments, it is important to weigh the risks versus the benefits of treatment. For example, there may be times when chemotherapy could reduce rather than increase life expectancy. Second, to evaluate an individual's response to treatment. Third, to see if/how the cancer is progressing. Fourth, to estimate prognosis. Finally, to help clinicians understand which patients may require special assistance so that appropriate referrals can be made to improve quality of life.[7] In response to these roles, several PSSs or measures had been developed years back and reported in the literature. Examples of such documented PSS are Karnofsky scale, Eastern Cooperative Oncology Group Scale (ECOGS), and Global Assessment of Functioning scale. Others are "International Physical Activity Questionnaire," Lanosky scale for children, "Timed Get Up and GO" scale, "Frailty index," as well as "Short Physical Performance Battery" scale. More recently, electronic monitoring devices for PS assessment such as smart phones and smart wrist watches were developed.[8]

Two of more widely used scales are the Karnofsky scale and the ECOGS.[9] The latter is also called the Zubroid or World Health Organization (WHO) Scale. The PSS was described first by Karnosky et al. in 1984.[7] It was introduced for assessing patients receiving nitrogen mustard chemotherapy for primary lung carcinoma. Each patient was given a score on a linear scale between 0 (dead) and 100 (normally active), summarizing their ability to perform daily activities, and the level of assistance they required to do so. This scoring was subsequently used throughout oncology practice as a numerical guide to patients' general health. In 1960, ECOG introduced the ECOG scale that was published by Oken et al., in 1982 and later modified by Gordon C Zubrod with expansion of the 5 point scale to 6 point scale with the addition of PS 5. The WHO adopts and recommends the ECOGS due to its simplicity.[11]

Following the literature search, PSS is widely used in the developed countries in the management of cancer patients,[9-12] but it appears that it is underutilized by medical practitioners in developing countries to which Nigeria belongs. The present study therefore aimed to assess the level of awareness, knowledge, and practice of PSS among medical practitioners in Edo state, Nigeria.

MATERIAL AND METHODS

This was a descriptive cross-sectional study design for medical practitioners that managed HNCs (family dental physicians, otolaryngologist, and oral and maxillofacial surgeons) in Edo state that consented to participate in the study. The study was carried out between April 2019 and December 2019. Anonymity and confidentiality of all the responses from the respondents were assured in the filling of the questionnaire. Excluded from the study were those who refused to participate in the study.

The minimum sample size for statistically meaningful deductions was determined using the statistical formula of Fisher for calculating sample size: $N = Z^2P(1-P)/d^2$. Where N is the minimum sample size for a statistically significant survey, Z is normal deviant at the portion of 95% confidence interval = 1.96, since this is preliminary study in Nigeria, a best guess prevalence of 50% was chosen for the estimation of sample size,[13] and d is margin of error acceptable or measure of precision = 10%. Using this formula, the minimum sample size (N) is 96. Therefore, the study of 96 respondents will give meaningful statistical deductions. However, the sample size was increased to 110 to compensate for 10% attrition. Therefore, 110 questionnaires were designed for the study.

The questionnaire was a close-ended, semi-structured, and self-administered type, and was sent physically to respondents using a well-known dental social media group in Edo state. The questionnaire consists of 35-items divided into four domains: (1) biodemographic characteristics with five items, (2) awareness of PSS with two items, (3) knowledge on PSS of 18 items, and (4) practice of PSS of ten items. The questionnaire was developed by the researchers. The questionnaires were pretested for validity and reliability, content validation was done, and taking consensus from 5 experts in the fields of Family Dental Physicians, Otolaryngologist, and Oral and Maxillofacial Surgeons. The questionnaire was pretested in a pilot study on ten respondents who were not part of the study. This was done by the test-pretest method and using Cronbach's coefficient to evaluate the reliability. Demographic information inquired about the respondent's age, gender, years of practice, and place of practice. The awareness section inquired about the respondent's insight about PSS. Awareness of PSS was assessed to mean those who have heard of the term PSS before the commencement of the study. It also sought to answer sources of awareness. The knowledge section was narrowed on the general knowledge on PSS with response of

"yes," "no," and "don't know." The overall knowledge of PSS was assessed based on a point score system developed by the researcher addressing the 18 questions on knowledge of PSS. Each response score ranges from 0 to 2 (yes = 2, no = 1, and no idea score = 0). The overall knowledge of PSS score is 0–36. A score of 0–9 points with percentage score of 0–25% was graded as poor, score of 10–17 points with percentage score of 26–50% was graded as fair, score of 18–27 points with percentage score of 51–75% was graded as good, and score of 28–36 points with percentage score of 76–100% was graded as excellent. The practice of PSS was a ten-item question with the response of "yes," "no," and "don't know."

The study was analyzed using the Statistical Package for the Social Sciences version 21 (IBM, USA). Simple descriptive statistics were used to define the characteristics of the study variables by counting and calculating percentages for the categorical variables. In the inferential statistics, we used Chi-square test for univariate analysis of the categorical variables. $P < 0.05$ was taken to indicate statistical significance.

RESULTS

One hundred and six of the 110 randomly distributed questionnaires were retrieved, given a response rate of 96.4%. The Cronbach's alpha was 0.89 indicating good reliability in this study. The sociodemographic characteristic of the respondents is presented in [Table 1]. The male-to-female ratio was 2.4:1.0. The mean age was 33.3 ± 5.30 years, ranging from 25 to 46 years. Most of the respondents were within the age range of 31–40 years, while the least numbers were over 40 years. Majority (74.5%) of the respondents had practiced <10 years, while only 24.6% of the respondents had practiced more than 10 years [Table 1]. Half (50.1%) of the respondents were oral and maxillofacial surgeons, while the otorhinolaryngologists comprise the least (14.1%) of the study participants. Expectedly, more than two-third (78.3%) of the respondents practiced in the urban settings in this study.

[Table 2] presents the awareness of the respondents about PSS. Of the total 106 respondents, less than half (46.2%) had heard of PSS. Out of this number of respondents that had heard of PSS, just only 10.2% heard about it during their undergraduate program activities, although 49.0% of the respondents claimed to have heard about it in their postgraduate program. Sadly, just only 6.1% of the respondents had heard of PSS through conferences and workshops; however, social media/internet was the second most prevalent (16.3%) source of information claimed by the respondents [Table 2].

The knowledge on PSS by the respondents is presented in [Table 3]. More than two-third (73.6%) of the respondents had a general poor knowledge regarding PSS. Specifically,

Table 1: Sociodemographic characteristics of the respondent (*n*=106).

Variable	Category	Frequency	Percent
Age groups (years)	20–30	40	37.7
	31–40	50	47.2
	41–50	16	15.1
Gender	Male	75	70.8
	Female	31	29.2
Years in practice (*n* [%])	1–5	46	43.4
	6–10	33	31.1
	11–15	20	18.9
	>15	7	6.6
Type of specialties (*n* [%])	ENT	15	14.1
	OMFS	53	50.1
	FD	38	35.8
Location of practice (*n* [%])	Rural	23	21.7
	Urban	83	78.3

ENT: Ear nose and throat, OMFS: Oral and maxillofacial surgery, FD: Family dentistry

Table 2: Awareness of performance status scale by the respondents (*n*=106).

Variables	Category	Frequency	Percent
Have you heard of performance status scale before now	Yes	49	46.2
	No	40	37.7
	Do not know	17	16.1
If aware, source of awareness	Undergraduate program	5	10.2
	Postgraduate program	24	49.0
	Journals	7	14.3
	Textbooks	2	4.1
	Conferences/ seminars/workshop	3	6.1
	Internets/social media	8	16.3

only 49.1% of the respondents knew that PSS can be used to assess patients' daily physical activities. Only 21.7% knew that the Eastern Cooperative Oncology Group (ECOG) Scale is the recommended scale by the WHO. More than half (80.2%) of the respondents do not know that ECOG scale has a better validity and reliability compared to Karnofsky scale. When asked if electronic monitoring devices such as smart phones and smart wrist watches can be used to assess patient PS, only 45.5% answered correctly. More than half (52.8%) of the respondents, however, knew that it is possible to assess patients' PS in the course of history taken. Furthermore, 52.8% of the respondents answered correctly that PSS can be used to assess treatment outcome in HNC patients. Unfortunately, only 18.9% knew that the Lanosky scale is used to measure PS in children. When asked if poor interobserver variability is one of the drawbacks of most PSSs, just only 17.9% of the respondents knew the answer.

Table 3: Knowledge of performance status scale by the respondents (*n*=106).

Variable	Category	Frequency	Percent
Performance status is used to assess patient daily physical activities	Yes	52	49.1
	No	12	11.3
	Do not know	42	39.6
Eastern cooperative oncology group scale is the recommended scale by the WHO	Yes	23	21.7
	No	8	7.5
	Do not know	75	70.8
Eastern cooperative oncology group scale has a better validity and reliability compared to Karnofsky scale	Yes	21	19.8
	No	6	5.7
	Do not know	79	74.5
Electronic monitoring devices such as smart phones and smart wrist watches can be used to assess patient performance status	Yes	48	45.5
	No	5	4.7
	Do not know	53	50.0
Is it possible to assess patient performance status during history taken	Yes	56	52.8
	No	5	4.8
	Do not know	45	42.4
Performance status can be used to assess treatment outcome in head and neck cancer patients	Yes	56	52.8
	No	4	3.8
	Do not know	46	43.4
Lanosky scale is used to measure performance status in children	Yes	20	18.9
	No	7	6.6
	Do not know	79	74.5
International physical activity questionnaire is used to measure performance status	Yes	21	19.8
	No	7	6.6
	Do not know	78	73.6
GAF can also be used in the assessment of performance status	Yes	22	20.8
	No	3	2.8
	Do not know	81	76.4
Zubrod scale has a rating from 0 to 5	Yes	17	16.0
	No	6	5.6
	Do not know	83	78.4
The WHO scale is very easy to use	Yes	21	20.4
	No	5	4.6
	Do not know	80	75.0
The WHO scale is a subjective scale	Yes	22	20.8
	No	3	2.8
	Do not know	81	76.4
The Karnofsky scale is a linear scale	Yes	19	17.9
	No	3	2.8
	Do not know	84	79.3
The Karnofsky and Zubrod scales are both subjective scales	Yes	12	11.3
	No	4	3.8
	Do not know	90	84.9

(Contd...)

Table 3: (*Continued*).

Variable	Category	Frequency	Percent
Timed get up and go scale is an objective scale	Yes	19	17.9
	No	7	6.6
	Do not know	80	75.5
Short physical performance battery assesses gait speed, chair stand, and standing balance	Yes	18	16.9
	No	7	6.6
	Do not know	81	76.5
Frailty index has both objective and subjective components	Yes	12	11.3
	No	4	3.8
	Do not know	90	84.9
Drawbacks of most of these scales is poor inter-observer variability	Yes	19	17.9
	No	11	10.4
	Do not know	76	71.7
Grading of overall knowledge of performance status score	Poor	78	73.6
	Fair	13	12.2
	Good	9	8.50
	Excellent	6	5.70

WHO: World health organization, GAF: Global assessment of functioning

[Table 4] shows the practice of PSS by the respondents. More than two-third (87.8%) of the respondents said that they are involved in the management of patient with HNC. While <10% (6.7%) of the respondents had been managing patients with HNC for more than 10 years now, but more <10% (16.9%) had been seeing the same patients <2 years before the study. More than half (53.8%) of the respondents answered that they have never used PSS in the course of managing HNC patients. When asked reasons for not routinely assessing PS on your patient, 49% said that they have not heard about PSS, 30.3% do not know how to use the PSS, 16% do not think it is necessary in management of patients, and 4.7% said that it can delay diagnosis and hence management. Importantly, 88.7% of the respondents think that PSS can be used in developing countries. Of the 106 respondents, 73.6% answered that they inquire about their patients' daily activities during history taking. When asked the respondents if they think it is important to predict treatment outcome with PSS, 80.2% said yes, and 19.9% were not in affirmative.

[Table 5] presents the association between the knowledge of PSS and characteristics of the respondents. The age, gender, years of practice, type of specialty, and location of practice were not related to the knowledge of PSS by the respondents (*P* > 0.05) [Table 5]. There was a significant association between awareness of PSS before this study and the knowledge of PSS among the respondents (*P* = 0.02) [Table 5].

DISCUSSION

The present study aimed to assess the level of awareness, knowledge, and practice of PSS among medical practitioners

Table 4: Practice of performance status scale by the respondents (*n*=106).

Variable	Category	Frequency	Percent
Are you involved in the management of patient with head and neck cancer?	Yes	93	87.8
	No	13	12.2
How long have you been involved?	<2 years	18	16.9
	3–5 years	35	33.0
	6–10 years	46	43.4
	>10 years	7	6.7
How often do you do performance status assessment on your patient?	Never	57	53.8
	Occasionally	13	12.3
	Rarely	36	33.9
	Always	0	0.00
Reasons for not routinely assessing performance status on your patient?	Haven't heard about it	52	49.0
	I do not think is necessary in management of patient	17	16.0
	It can delay diagnosis and hence management	5	4.7
	Do not know how to use the scale	32	30.3
	Others	0	0.00
Do you think performance scale should be used routinely in management of patient with head and neck cancer?	Yes	52	49.0
	No	9	8.5
	Maybe	45	42.5
Do you think performance status scale is complex to use?	Yes	31	29.3
	No	24	22.4
	Do not know	51	48.1
Do you think it can be used in developing countries?	Yes	94	88.7
	No	12	11.3
	Do not know	0	0.00
Do you inquire about your patients daily activities during history taking?	Yes	78	73.6
	No	28	26.4
	Do not know	0	0.00
Do you think it is important to know patient daily activities?	Yes	84	79.2
	No	17	16.1
	Do not know	5	4.7
Do you think it is important to predict treatment outcomes using PSS?	Yes	85	80.2
	No	16	15.1
	Do not know	5	4.7

in the management of HNC patients in Edo state, Nigeria. From the reviewed literature, to the best of our knowledge, it appears that this is the first study on awareness, knowledge, and practice of PSS in the management of HNC patients among health-care providers globally. The management of HNC involves the referral of patients from the family physicians to the specialists for definitive management after initial assessment. Recently, the 8th edition of Union for International Cancer Control TNM classification of malignant tumors requested that PS and addictions such tobacco, areca nut, and alcohol should be considered as essential prognostic factors during the staging of malignant tumors.[14]

It is a worrisome fact that almost nine-tent of the respondents had not heard of PSS before this study and this could be the reason for the significant association between awareness and knowledge of PSS found in this study [Table 5]. Although no previous study for comparison, this low level of awareness is not encouraging due to the important role of PSS in the management of cancer patients. The majority of the respondents never heard of PSS during the postgraduate activities despite the rising prevalence of cancer in Sub-Saharan Africa region. The majority of the respondents only heard of PSS during postgraduate programs; however, most of the respondents utilized internet services as a source of information. This is likely due to the fact that the majority of the respondents practice in the urban setting where social media is readily available. Sadly, just 6.1% of the respondents had heard of PSS through conferences and workshops, and this is a clarion call for more emphasis in the role of PSS during conferences and workshops.

It is disheartening that more than two-third (73.6%) of the respondents had overall poor knowledge regarding PSS. Although no previous studies for comparison, this is a drawback in our health-care system that needs to be strengthened. Educational campaigns from undergraduate

Table 5: Univariate analysis between knowledge of performance status scale and the characteristics of the respondents (n=106).

Variables	Category	Poor knowledge of PSS		Chi-value	P-value
		Yes (n [%])	No (n [%])		
Age (years)	20–30	30 (28.3)	10 (9.43)		
	31–40	37 (34.9)	13 (12.3)	0.428	0.81
	41–50	14 (13.2)	2 (1.89)		
Gender	Male	55 (51.8)	15 (14.2)	0.414	0.52
	Female	25 (23.6)	11 (10.4)		
Years of practice	1–5	35 (33.0)	8 (7.5)		
	6–10	23 (21.7)	13 (12.3)		
	11–15	17 (16.0)	4 (3.80)	2.399	0.49
	>15	6 (5.70)	0 (0.00)		
Type of specialty	ENT	13 (12.3)	6 (5.70)		
	FD	23 (21.7)	11 (10.3)	1.768	0.41
	OMFS	45 (42.5)	8 (7.50)		
Location of practice	Rural	15 (14.2)	4 (3.80)	0.019	0.89
	Urban	66 (62.2)	21 (19.8)		
Have you heard of PSS	Yes	26 (24.5)	19 (17.9)		
	No	40 (37.7)	2 (1.90)	8.07	0.02
	Do not know	15 (14.2)	4 (3.80)		
	Undergraduate	7 (6.60)	2 (1.89)		
	Postgraduate	37 (34.9)	17 (16.0)		
	Journals	12 (11.3)	4 (3.77)		
Source of information	Textbooks	4 (3.77)	0 (0.00)		
	Conference	16 (15.1)	2 (1.89)	2.153	0.17
	Internets	4 (3.77)	1 (0.94)		

PSS: Performance status scale

and postgraduate levels should be established to transmit accurate information and motivation toward PSS. There was under-utilization of PSS in this study as more than half (53.8%) of the respondents have never used the PSS in the course of managing patients with HNC, reason could be not heard about as claimed by majority of the respondent. Furthermore, most (49%) of the respondents agreed that PSS should be used routinely in the management of patients with HNC and this is an indication of their willingness to use the PSS. Another evidence of the willingness to use PSS if widely publicized, is that the majority (88.7%) of the respondent believed that PSS can be used in developing countries.

The lack of association between age, gender, years of practice, type of specialty, and location of practice is unsurprising because the finding indicated the generalized lack of awareness and inadequate knowledge of PSS among those involved in the management of HNC. This is an urgent call on trainers at all levels of medical education to emphasize the roles of PSS in the care of cancer patients. Content validity and reliability are two key indicators of a qualified measuring instrument. These two measures ensure the stability and accuracy of the measurement tools.[15] In our study, content validity test results showed that the questionnaire developed by the researchers is a valid and reliable instrument. To the best of our knowledge, this is the first questionnaire validated in terms of content validity.

We would like to acknowledge several limitations of our study. First, causality cannot be assessed due to the cross-sectional nature of the study. Second, lack of previous studies on awareness, knowledge, and practice of PSS limits comparison of the findings in this study. Although PSS is widely used globally, this study only focused on family dental physicians, otolaryngologists and oral and maxillofacial surgeons for awareness, knowledge, and practice, making findings generalization with cautions; however, the high response rate can make generalization feasible.

CONCLUSION

Most Medical Practitioners that manage head and neck cancer patients lack awareness and knowledge of PSSs and hence are poorly utilized in the management of patients in routine practice.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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