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Short Communication

Evaluation of the impact of anaemia on quality of life among breast cancer patients undergoing chemotherapy in Malaysia

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Abstract

Objectives The purpose of this study was to evaluate the impact of anaemia on the quality of life (QOL) among breast cancer patients.

Methods A total of 120 anaemic (haemoglobin < 12 g/dL) breast cancer patients were identified through chart review. Patients were followed-up for three cycles of chemotherapy filled in a QOL questionnaire Functional Assessment Chronic Therapy –Anaemia at each follow-up session. Data such as haemoglobin Hb levels and chemotherapy regimens were also recorded on each follow-up. Data were analysed using SPSS.

Key findings The Hb level and QOL mean scores of all follow-ups were 10.34 ± 0.73 g/dL and 96.37 ± 16.15 g/dL, respectively. QOL was adversely affected by anaemia severity, and the curves declined significantly from the first follow-up to the third follow-up ($P < 0.001$).

Conclusion It is crucial to consider developing a guideline for the treatment of anaemia, which is not available currently, and improve the QOL for the wellbeing of cancer patients.

Keywords: anaemia; quality of life; breast cancer; chemotherapy

Introduction

Breast cancer is a growing burden, especially in developing countries. Anaemia (haemoglobin (Hb) < 12 g/dL) is common in cancer and has a very high incidence, ranging from 41% before chemotherapy to 43.1% after receiving antineoplastic treatment.[1] Increased incidence of anaemia in cancer patients led to increased morbidity and reduced health-related quality of life (HRQOL), lower sensitivity to chemotherapy, and even shorter survival.[2] In addition, anaemia in breast cancer patients has been found to delay response to chemotherapy, causing fatigue that led to reduced quality of life (QOL).[3] Based on published studies stating that cancer-related anaemia does not only affect the health of the patient but also deteriorates their QOL,[4] the evaluation of anaemia in breast cancer patients becomes essential in helping oncologists, physicians, and patients to make decisions and choose appropriate interventions.[5]

Validated HRQOL scales are used to evaluate the impact of anaemia on QOL. The Functional Assessment Chronic Therapy – Anaemia (FACT-An) which is used in this study, is a specific scale developed in the late 1990s specifically to measure QOL in anaemic cancer patients.[6]

This study aimed to detect the impact of anaemia on QOL among breast cancer patients undergoing chemotherapy.

Materials and Methods

The study was a prospective observational longitudinal, multicentre study design that was conducted for eight months starting from July 2019 to March 2020 and included 120 anaemic breast cancer patients who fulfilled the inclusion criteria. The study was conducted in the oncology and day care department of Hospital Kuala Lumpur (HKL), Institut Kanser Negara (IKN), Putrajaya, and University Malaya Medical Centre (UMMC), Malaysia.

Study population

Participants were anaemic with Hb < 12 g/dL, aged 18 years old and above, diagnosed breast cancer patients, and received chemotherapy with a planned three consecutive cycles starting from cycle 2. However, cancer patients with inherited anaemia, suffering from bleeding or haematological, and psychological disorders or those who were in 1st cycle of chemotherapy or received hormonal therapy, radiotherapy, or endocrine therapy, were excluded. Patients at 1st cycle of chemotherapy excluded from the study as we wanted to know the effect of factors for example chemotherapy and cancer on anaemia severity as the amin effect would be cancer alone at 1st cycle.

Data collection and data analysis

A researcher went through the patients' medical files in the ward to identify those who were experiencing anaemia (Hb ≤ 12 g/dL). Once the patients were identified, they were approached to participate in the study. Patients were informed of the purpose of the study, and once agreed, they were given a consent form to sign. Subsequently, patients were given the FACT-An questionnaire. The patients were monitored for another two cycles of chemotherapy (a total of three cycles). With the aid of a nurse or a medical staff, the FACT-An (English or Malay Version) for anaemia assessment were filled in during each follow-up, which took about 10 to 20 minutes to complete.

Data were analysed using SPSS Version 23.0, and computation of the results was made according to the guidelines of the FACIT-G group. Linear regression was performed to find any significant associations between total variables. FACT-An is only measured as higher the score, better the QOL.

Key findings

Out of 120 respondents, the majority were elderly (n = 89; 74.2%), with a mean age of 52.63 (±SD11.27), Malay ethnic (n = 77; 64.2%), and married (n = 108; 90%). Hb level for all patients ranged from 7.8 g/dL to 11.9 g/dL, with a mean of 10.34 ± 0.73 (mean ± SD) and the average mean and SD for total QOL was 96.38 ± 16. 15. Other data are summarised in Table 1.

Effect of anaemia on quality of life

Linear regression analysis showed a significant association (P < 0.001) between QOL and Hb levels (anaemia severity) of the patients. Besides, the Pearson correlation analysis revealed a moderate positive relationship (r = 0.597) between QOL and Hb levels. Generally, a change in the QOL score is explained by changes in 1 decilitre (dL) Hb level, that is for every 1 dL increase in Hb level, QOL increased by 13.230 points, as shown in Table 2.

Table 1 Demographic data in breast cancer patients undergoing chemotherapy (N = 120)

Variable		N (%)
Mean age	52.63 (SD 11.27)	
Age	≥60	89 (74.2%)
	<60	31 (25.8%)
Race	Malay	77 (64.2%)
	Indian	14 (11.7%)
	Chinese	27 (22.5%)
	Others	2 (1.7%)
Marital status	Married	108 (90%)
	Single	8 (6.7%)
	Divorced	4 (3.3%)
Stage of breast cancer	Stage I	5 (4.2%)
	Stage II	29 (24.2%)
	Stage III	62 (51.7%)
	Stage IV	24 (20%)
Hb g/dL		(Mean ± SD)
Total average Hb		10.34 ± 0.73
Hb	Mild (10–12) g/dL	78 (65%)
	Moderate (8–10) g/dL	41 (3.7%)
	Severe (6–8) g/dL	1 (0.83%)
QOL FACIT-An (0–188)		(Mean ± SD)
QOL Total (0–188)		96.38 ± 16.15
QOL FACT-An	1st Follow up (0–188)	108.96 ± 20.94
	2nd Follow up (0–188)	95.11 ± 17.58
	3rd Follow up (0–188)	85.06 ± 25.88

Table 2 Association between QOL and anaemia severity

	QOL (FACT-An)				
	R^2	F	(r)	B (95% CI)	P-value
Hb g/dL	0.356	65.215	0.597	13.230 (9.986, 16.474)	<0.001

P-value < 0.005 level of significance.
(r), Pearson Correlation.

Discussion

The main aim of the present study was to determine the impact of anaemia on QOL in breast cancer patients. This finding confirmed the result of other study that indicated the significant correlation between QOL score and Hb levels.[4]

The severity of anaemia aggravates QOL in breast cancer patients. Understanding the impact of anaemia on patients' QOL is important not only for patients but also for healthcare providers to evaluate the efficacy of cancer treatments and the choice of appropriate medications.

According to the results of the current study across the three-follow-ups, the significant decline of participants' QOL is mainly due to the adverse impact of anaemia (i.e., anaemia severity). A review by Abdel-Razeq[7] mentioned that anaemia caused an adverse impact on cancer patients' QOL via several aspects, and the impact is proportionately related to anaemia severity, that is the QOL scores decreased, as the severity of anaemia increased.[8] A similar result was reported by Kim and colleagues who conducted a study among 30,526 Korean citizens and concluded that the level of QOL declined as the severity of anaemia increased.[8]

To our knowledge, this is the first prospective multi-centre study conducted in Malaysia. Kifle *et al*.[9] reported the lack of information on the prevalence of anaemia among cancer patients in developing countries, and Malaysia is one of them.[10] Similarly, Kanuri *et al*.[9] mentioned the scarcity of studies that focuses on the prevalence and severity of anaemia among Asian cancer patients.

Conclusion

Anaemia could be one of the reasons that lead to decrease QOL in breast cancer patients indicating a moderate relationship between anaemia and QOL. Future intervention studies are highly recommended to determine the effect of anti-anaemic medications on anaemia prevalence, severity, and QOL. Besides, results of such studies could significantly help in developing effective treatment guidelines for this crucial medical issue.

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Author Contributions

B.A.R.H. designed the study and F.M.S.M. conducted, analysed data, and drafted the study. M.K. also analysed data and proofread the study. A.H.M. and M.K. reviewed and edited the drafted study. All Authors stated that they had complete access to the study data that support the publication.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

References

1. Pourali L, Taghizadeh A, Akhoundi MR *et al*. Frequency of chemotherapy induced anaemia in breast cancer patients. *Iran J Cancer Prev* 2017; 10: e4672. http://doi.org/10.17795/ijcp-4672
2. Calabrich A, Katz A. Management of anaemia in cancer patients. *Future Oncol (London, England)* 2011; 7: 507–17.
3. Akin S, Kas Guner C. Investigation of the relationship among fatigue, self-efficacy and quality of life during chemotherapy in patients with breast, lung or gastrointestinal cancer. *Eur J Cancer Care* 2019; 28: e12898. http://doi.org/10.1111/ecc.12898
4. Jounblat Y, El Hachem G. Anaemia in metastatic solid tumors: a frequent and serious finding. small review of the literature. *J Hematol Transfus* 2017; 5: 1073.
5. Bottomley A. The cancer patient and quality of life. *Oncologist* 2002; 7: 120–5.
6. Yellen SB, Cella DF, Webster K *et al*. Measuring fatigue and other anaemia-related symptoms with the Functional Assessment of Cancer Therapy (FACT) measurement system. *J pain symp manag* 1997; 13: 63–74. http://doi.org/10.1016/S0885-3924(96)00274-6
7. Abdel-Razeq H, Hashem H. Recent update in the pathogenesis and treatment of chemotherapy and cancer induced anaemia. *Criti Rev Oncol Hematol* 2020; 145: 102837. https://doi.org/10.1016/j.critrevonc.2019.102837
8. Kim YJ, Do Han K, Cho KH *et al*. Anaemia and health-related quality of life in South Korea: data from the Korean national health and nutrition examination survey 2008–2016. *BMC public health* 2019; 19: 735.
9. Kifle E, Hussein M, Alemu J *et al*. Prevalence of anaemia and associated factors among newly diagnosed patients with solid malignancy at Tikur Anbessa specialized hospital, radiotherapy center, Addis Ababa, Ethiopia. *Adv hematol* 2019; 8279789. http://doi.org/10.1155/2019/8279789
10. Kanuri G, Sawhney R, Varghese J *et al*. Iron deficiency anaemia coexists with cancer related anaemia and adversely impacts quality of life. *PLoS One* 2016; 11: e0163817. https://doi.org/10.1371/journal.pone.0163817