

Knowledge and Experience of Women with Breast Cancer Receiving Chemotherapy in Selected Public Hospitals, Addis Ababa Ethiopia, 2021: Cross-sectional Study

Kalkidan Ayalew

Oncology Nurse at Tikur Anbesa Specialized Hospital, Ethiopia.

Yohannes Ayalew

Assistant Professor and Ph.D. Fellow, Addis Ababa University College of Health Science Department of Nursing and Midwifery, Ethiopia.

Tsion Alemu

Lecturer, Addis Ababa University College of Health Science Department of Nursing and Midwifery, Ethiopia.

Tilaye Gebru

Lecturer at School of Nursing and Midwifery College of Health Science, Haramaya University, Ethiopia.

Background: Breast cancer is the most common cancer in women worldwide, in 2018 2.1 million new cases are diagnosed. In Ethiopia due to the increasing awareness of breast cancer patients are taking chemotherapy in different parts of the country but patients' knowledge of chemotherapy and experience of chemotherapy have not been assessed very well and this study tried to assess patients' knowledge about chemotherapy. Objective: The objective of the study is to assess the knowledge and experience of women with breast cancer receiving chemotherapy in selected public hospitals in Addis Ababa Ethiopia, in 2021.

Methods: Institutional based cross-sectional study was conducted and data was collected from Tikur Anbessa Specialised Hospital and Saint Paul Hospital Millennium Medical College from February 8 to March 1, 2020. Data was entered into Epi-data version 4.6.0 and exported to SPSS version 26. Descriptive statistics such as frequency, percentages, mean and standard deviation were done and displayed in tables. Bivariate and multivariate logistic regression analysis was employed.

Results: The study involved 250 participants. The mean age of the respondents was (43.35±11.1). Of the total 135 (54%) respondents were not knowledgeable and 115 (46%) were knowledgeable. Age >45 years and patients who lived in Addis Ababa were associated with higher knowledge. Respondents who took chemotherapy fourth to the sixth cycle and who are currently single were associated with the worst experience and the distance-time it takes to get to the hospital when is three to six hours were associated with the tolerable experience.

Conclusion and recommendations: The study revealed that more than half of the participants were not knowledgeable and more than half of the participants had the worst experience. Hence healthcare providers should provide information about chemotherapy to their patients and should teach them how to manage the possible side effects.

Introduction

Cancer is the leading cause of mortality and morbidity worldwide and is characterized by the uncontrolled growth and spread of abnormal cells [1]. According to GLOBOCAN 2020, there were an estimated 19.3 million new cases of cancer and 10 million deaths from cancer worldwide in 2018 [2]. One of the most commonly diagnosed cancers worldwide is breast cancer which accounts for 2.3 million (11.7%) new cases total in 2020 [3]. Breast cancer incidence in developed countries is higher, while relative mortality is greatest in less developed countries [4]. And it is increasing

particularly in developing countries where the majority of cases are diagnosed in late stages [5]. In developed countries like the USA, in 2019, approximately 268,600 new cases of invasive breast cancer and 48,100 cases of DCIS (ductal carcinoma in situ) were diagnosed among US women, and 41,760 women died from this disease [6].

The incidence rate of breast cancer ranges from 19.4 per 100,000 people in East Africa to 89.7 per 100,000 in West Europe (WHO, 2015). Breast cancer is growing strongly in South America, Africa, and Asia. According to the World Health Organization (WHO) country profile report in 2020, breast cancer is leading cancer in Ethiopia with an estimated 16,133 (20.9%) new cases and 5 years prevalence of 48.5%. Even though breast cancer is a mostly curable disease in developed countries, Ethiopia is one of the countries with the highest age-standardized mortality rate which is reported to be 22.9 per 100,000 population [7]. Breast cancer has different risk factors such as unhealthy lifestyles [8]. Long-time fertility that happens with menarche at an early age and menopause in old ages, the use of preventive pregnancy hormones, and having no children are also among risk factors. Obesity after menopause, use of hormone replacement therapy, physical inactivity, and alcohol consumption has also been reported as risk factors. In contrast, having children and breastfeeding can be among preventive factors [9]. Chemotherapy is the most common and frequent treatment for cancer disease [10]. But is also responsible for multiple negative side effects [11]. Chemotherapy regimens for breast cancer vary greatly concerning their constituent agents, frequency, route of administration, effectiveness, and side effects. Given that available chemotherapies have advantages and disadvantages relative to each other, it would be useful for health care providers to understand how these differences may influence individual patient preferences [12]. Breast cancer requires individualized treatment for survival and quality of life common treatments are chemotherapy, radiation, surgery, or a combination of the three [13, 14]. Patients in countries with poor healthcare infrastructure experience cancer treatments that are largely unknown. The theme 'experiences related to the body' included four subthemes: changes in eating and bowel habits, dry and sensitive skin, fever, and feelings of abnormal body sensations, most of which could be related to side effects. The experiences of changes in eating and bowel habits were reported to be difficulty in eating and keeping food down, as well as episodes of diarrhea [15]. Patients experience different side effects of chemotherapy such as fatigue, body aches, pain, various types of neuropathy such as severe numbness and tingling in their extremities, blood clots, short-term memory loss, lingering cough, skin change, a metallic taste in their mouth after receiving chemotherapy, weight gain, blurry eyesight, having their teeth removed, low blood counts, allergic reactions to medications, and severe burning near their breasts, under their arms, and all over their body ineffectively managed, these side effects can lead to interruptions and delayed cancer treatment [16]. Cancer patients demand information to understand chemotherapy-related adverse effects and actions to be taken. The provision of sufficient pre-chemotherapy information including side effects and self-care strategies was proven to reduce certain treatment-related concerns and physical and psychosocial outcomes [17].

Materials and Methods

Study Design, Study Setting, and Study Period

An institutional-based cross-sectional design was used among women with breast cancer who undergoes chemotherapy in oncology units of Tikur Anbessa Specialised Hospital (TASH) and Saint Paul Hospital Millennium Medical College (SPHMMC) from February 08 to March 08, 2021.

Population, Sample Size Determination, and Sampling Procedure

After obtaining ethical clearance and permission from Tikur Anbessa Specialised Hospital and Saint Paul Hospital Millennium Medical College, we conducted a study on All women with breast cancer who came for chemotherapy in TASH and SPHMMC. Single proportion formula was used with 50%

proportion and after adding a 10% response rate sample size was 264. Study participants were selected using a systematic random sampling technique and proportionally allocated in each hospital.

Data Collection Tool and Procedure

The study tool has four parts the 1st. is socio- demographic questions the 2nd. part consists of 7 knowledge about chemotherapy questionnaires adapted from coolbrandit [18]. The 3rd. the part contains 30 questions of chemotherapy experience questionnaires adapted from the breast chemotherapy questionnaire. A face-to-face interview was held among women with breast cancer who are taking chemotherapy in the selected study areas using a researcher-administered questionnaire. The questionnaire was translated to the local language Amharic by bilingual translators for data collection.

Study Variables

The dependent variables were the Knowledge and Experience of the patient about chemotherapy. The independent variables included socio-demographic characteristics such as age, sex, marital status, educational status, and religion. Environmental factors such as distance to get to the hospital, family history, and place of residency. Socio-economic status such as monthly income, occupation, and family size.

Operational Definition

Knowledge about chemotherapy; Patients are defined as knowledgeable if they score at or above the mean knowledge score. Experience of the chemotherapy; Questions are asked to patients related to side effects and if they scored above the mean considered as worst experience and below the mean considered a tolerable experience.

Data Quality Management

To maintain the quality of the data structured and validated English version of the questionnaire was adapted and translated to Amharic. Before actual data collection started pretest was done on 5% of the study participants and minor changes were made to the questionnaire. To ensure data quality, the data collectors (Bsc nurses) were provided a two-day training on the contents of the questionnaire, the identification of patients based on the inclusion/exclusion criteria, and how to approach and get consent from patients.

Data processing and analysis

Data was entered into Epi-data version 4.6.0 and exported to SPSS version 26 and before analyzing the data, responses were coded properly. Descriptive statistical analyses such as Frequency, percentages, mean and standard deviation were done and displayed in tables. Bivariate and multivariate logistic regression analysis was employed to evaluate the independent effect of the exposure variable on the outcome variable. Those with $p < 0.05$ were considered statistically significant and results were displayed in text and tables.

Results

It was intended to include 264 participants in the study but data was collected from 250 participants with a 13 (5%) nonresponse rate. The age range is between 20 to 74 years old with a mean of 43.35, SD \pm 11.1, range of 54 years old, the highest number of participants lies from 35 to 60. Of the study participant, 133 (53.2%) are Orthodox religious followers. Among women who participated in the study 66 (26.4%) had secondary level educational status, 78 (31.2%) were unable to read and write, 62 (24.8%) diploma and above, and 62 (24.8%) had primary educational status and highest monthly income was 27300 and lowest 100 per month (Table 2). Among 250 participants 76 (30.4%) were unemployed, and 158 (63.2%) were married. The family size of study the participant was 1-11 and the mean family size was 4.48. Of the total participants, 143 (57.2%) came from outside of Addis Ababa. 85 (34%) of the women mentioned it took them 1-2 hours to get to the oncology center, 64 (25.6%) less than one hour, 54 (21.6%) three to six hours and 47 (18.8%) mentioned eight hours and above (Table 2). Regarding the history of cancer in the family 183 (73.2%) had no family history of cancer. Of the total participant 155 (62%) never heard about chemotherapy before, 48 (19.2%) heard about chemotherapy on television, 32 (12.8%) heard from friends and family, 13 (5.2%) from the radio, and 2 (0.8%) from the newspaper (Table 1).

Variables	Frequency	Percentage %
Age		
<45	162	64.8
>45	88	35.2
Religion		
Orthodox	133	53.2
Muslim	65	26
Protestant	48	19.2
Catholic	4	1.6
Educational status		
Unable to read and write	78	31.2
1-8	44	17.6
9-12	66	26.4
Diploma and above	62	24.8
Ethnicity		
Amhara	96	38.4
Tigre	18	7.2
Oromo	88	35.2
SNNPR	47	18.8
Others	1	0.4
Occupation		
Unemployed	76	30.4
Merchant	27	10.8
Farmer	22	8.8
Private	62	24.8
Government	61	24.4
Others	2	0.8
Marital status		
Married	158	63.2
Currently single	92	36.8
No of family		
< or = 5	199	79.6
>5	51	20.4
Monthly income		
< or =1000	64	25.6
>1000	186	74.4
Are you living in Addis Ababa?		

Yes	107	42.8
No	143	57.2
Distance from hospital		
<1 hour	64	25.6
1- 2 hours	85	34
3-6 hours	54	21.6
>8 hours	47	18.8
Any history of cancer in your family		
Yes	67	26.8
No	183	73.2
Chemotherapy cycle		
Second-third	87	34.8
Fourth-sixth	91	36.4
Seventh ninth	61	24.4
>Ten	11	4.4
Information about chemotherapy		
From different medias	63	25.2
Family and friends	32	12.8
I never heard	155	62

Table 1. Sociodemographic Characteristics of Women with Breast Cancer who are Receiving Chemotherapy in Selected Public Hospitals Addis Ababa, Ethiopia, 2021 (n=250).

Respondent's Knowledge of Chemotherapy

There were 7 questions regarding knowledge and each question has one mark. By using the knowledge mean score cut point the score is divided into two levels knowledgeable and not knowledgeable. Of the 250 respondents, 135 (54%) were not knowledgeable whereas 115 (46%) were knowledgeable (Table 2).

Knowledge	Mean	Frequency	Percentage%
Not knowledgeable	15.1	135	54
Knowledgeable	>15.1	115	46

Table 2. Distribution of Respondents' knowledge Level for Women with Breast Cancer who are Receiving Chemotherapy in Selected Public Hospitals in Addis Ababa, Ethiopia, 2021(n=250).

Respondent's Experience Towards Chemotherapy

There were 30 questions regarding the experience of respondents that answers all of the time, most of the time and a good bit of the time considered as worst experience, and some of the time, a little of the time, hardly any of the time, and none of the time considered as tolerable experience. By using the experience mean cut point the score is divided into two levels worst experience and tolerable experience. Of the total 250 respondents, 133 (53.2%) had the worst experience whereas 117 (46.8%) had tolerable experience (Table 3).

Experience	Mean	Frequency	Percentage%
Worst experience	>12.84	133	53.2
Tolerable experience	12.84	117	46.8

Table 3. Distribution of Experience of Women with Breast Cancer Receiving Chemotherapy in Selected Public Hospitals in Addis Ababa, Ethiopia, 2021.

Furthermore, the experience of the respondents showed loss of hair as the worst side effect 208 (83.2%), nausea and vomiting 161 (66.4%), low energy 157 (62.8%), tiredness and fatigue 146 (58.4), fatigue or tiredness that limits daily activities 137 (54.8%), upset or worried about as the result of hair loss 132 (52.8%), feeling unattractive 132 (52.8%) and sadness or tearful as result of hair loss 132 (52.8%). The most tolerable experiences were trouble in waiting for treatment 226 (90.4%), trouble waiting for room 221 (88.2%), inconvenience to coming or staying in hospital 195 (78%), numbness of fingers 167 (66.8%), sleep disturbance 132 (52.8%), stomach disturbance 210 (84%), loss of smell sensation 211 (84.4%), frustration and irritability 168 (67.2%), increased gas 206 (82.4%) feeling drowsy at day time 180 (72%), mouth ulcer 236 (94.2%), burning sensation of eye 181 (72.4%) and constipation 178 (71.2%).

Factors Associated with Knowledge of Women with Breast Cancer

Bivariate logistic regression was used to assess the association between each independent variable and dependent variable. Hence the level of the respondent's knowledge with age, educational background, number of families, monthly income, marriage, information about chemotherapy, and current address were associated. The multivariate regression analysis revealed that $P < 0.05$ age and current address were found to have an association with knowledge of chemotherapy. Age <45 years were 0.5 times {AOR=0.5: 95 CI (0.284, 0.957)} less likely to have knowledge than age >45 years. Patients who lived in Addis Ababa were 2.3 times {AOR=2.3 CI (1.102, 5.070)} more likely to know patients outside of Addis Ababa (Table 4).

Variables	Knowledge			OR 95% CI)	
	Below mean (%)	Above mean (%)	COR 95% CI	P value	AOR 95% CI
Age					
<45	76 (46.9)	86 (53.1)	2.302 (1.340, 3.955)	0.036	.521 (.284,.957) **
>45	59 (67)	29 (33)	1		1
Monthly income					
<1000	43 (67.2)	21 (32.8)	.478 (.263,.867)	0.396	1.347 (.677, 2.677)
>1000	92 (49.5)	94 (50.5)	1		1
Number of families					
<5	99 (49.7)	100 (50.3)	2.424 (1.249, 4.706)	0.094	.526 (.248, 1.115)
>5	36 (70.6)	15 (29.4)			1
Level of education					
Unable to read and write	56 (71.8)	22 (28.2)	.265 (.131,.539)	0.071	2.155 (.935, 4.966)
1-8	26 (59.1)	18 (40.9)	.468 (.213, 1.027)	0.624	1.254 (.508, 3.095)
9-12	28 (42.4)	38 (57.6)	.917 (.453, 1.854)	0.691	.638 (.309, 1.545)
Diploma and above	25 (40.3)	37 (59.7)	1		1
Information about Chemotherapy					
From different medias	24 (38.1)	39 (41.9)	2.504 (1.372,4.572)	0.289	.680 (.334,1.386)
Family and friends	17 (53.1)	15 (46.9)	1.360 (.632,2.923)	0.556	1.299 (.544,3.104)
I don't know	94 (60.6)	61 (39.4)	1		1
Marriage					
Married	80 (50.6)	78 (49.4)	.690 (.410,1.161)	0.179	1.499 (.831,2.706)
Currently single	55 (59.8)	37 (40.2)	1		1
The time it takes to get to the hospital					
< One hour	30 (46.9)	34 (53.1)	1.670 (.780,3.578)	0.306	1.724 (.608,4.888)
One-two hours	39 (45.9)	46 (54.1)	1.738 (.844,3.578)	0.312	1.659 (.622,4.428)
Three-six hours	38 (70.4)	16 (29.6)	.620 (.272,1.416)	0.07	2.371 (.933,6.028)

>Eight hour	28 (59.6)	19 (40.4)	1		1
Are you coming from Addis Ababa?					
Yes	70 (65.4)	37 (34.6)	.440 (.263,.739)	0.027	2.364 (1.102, 5.070) **
No	65 (45.5)	78 (54.5)	1		1

Table 4. Factors Associated with Knowledge of Women with Breast Cancer Receiving Chemotherapy in Selected Public Hospitals Addis Ababa, Ethiopia, 2021 (n=250).

**P value <0.05 AOR, adjusted odd ratio COR, crude odd ratio

Factors Associated with the Experience of Women with Breast Cancer

The multivariate regression analysis revealed that respondents who took chemotherapy fourth to the sixth cycle were 0.2 times (AOR=0.2: 95 CI (.049,.909) less likely to have tolerable experience than patients who took chemotherapy from two to third cycles, seventh to ninth cycles and greater than 10 cycles. The distance-time it takes to get to the hospital when is three to six hours 3.5 times (AOR=3.5: 95 CI (1.481, 8.430) is more likely to have tolerable experience of chemotherapy compared to the time it takes less than an hour, one to two hours and greater than eight hours. Patients who are currently single were 0.5 times (AOR=0.5: 95 CI (.310,.970) less likely to have tolerable experience than patients who are married (Table 5).

Variables	Experience			OR 95% CI	
	Below mean (%)	Above mean (%)	COR 95% CI	P-value	AOR 95% CI
Level of education					
Unable to read and write	42 (53.8)	36 (46.2)	1.041 (.533,2.033)	0.385	.549 (.310,.970)
1-8	17 (38.6)	27 (61.4)	1.929 (.878,4.234)	0.322	.663 (.344,1.279)
9-12	24 (36.4)	42 (63.6)	2.125 (1.047,4.315)	0.166	1.397 (.657,2.969)
Diploma and above	34 (54.8)	28 (45.2)	1		1
Monthly income					
<1000	25 (39.1)	39 (60.9)	1.527 (.856,2.723)	0.221	.663 (.344,1.279)
>1000	92 (49.5)	94 (50.5)	1		1
The time it takes to get to the hospital					
< One hour	31 (48.4)	33 (51.6)	.499 (.228,1.094)	0.118	1.958 (.843,4.547)
One-two hours	37 (43.5)	48 (56.5)	.608 (.288,1.285)	0.181	1.733 (.774,3.880)
Three-six hours	34 (63)	20 (37)	.276 (.121,.629) *	0.004	3.533 (1.481,8.43) **
>Eight hours	15 (31.9)	32 (68.1)	1		1
Chemotherapy cycle					
2nd-3rd cycle	47 (54)	40 (46)	2.270 (.564,9.132)	0.136	.327 (.075,1.425)
4th-6th cycle	37 (40.7)	54 (59.3)	3.892 (.968,15.645) *	0.037	.211 (.049,.909) **
7th-9th cycle	25 (41)	36 (59)	3.840 (.927,15.912)	0.056	.232 (.052,1.041)
>10 cycles	8 (72.7)	3 (27.3)	1		1
Marriage					
Currently single	34 (37)	58 (63)	1.888 (1.116,3.195) *	0.039	.549 (.310,.970) **
Married	83 (52.5)	75 (67.5)	1		1

Table 5. Factors Associated with Experience Women with Breast Cancer Receiving Chemotherapy in Selected

Public Hospitals Addis Ababa, Ethiopia, 2021.

****P value <0.05 AOR, adjusted odd ratio COR, crude odd ratio**

Discussion

This study showed the patient's knowledge of chemotherapy and the patient's experience of chemotherapy and factors associated with knowledge and experience in TASH and SPMMC Addis Ababa Ethiopia. The study results showed that 46% of participants were knowledgeable. The same findings were reported in a study conducted in Saudi Arabia 45.6% of participants were knowledgeable [19]. The similarity may be due to the same tradition and same socio-demographic status.

Regarding on side effects of chemotherapy in this study the most knowledgeable side effects were hair loss, nausea, and decreased appetite respectively. The same finding was reported in Saudi Arabia hair loss was the most knowledgeable side effect [19]. The study findings in Lithuania were inconsistent, hair loss was mentioned next to fatigue [20]. The difference may be due to participants considering hair loss more tolerable than fatigue. Early menopause and damaged mucosa were the lowest knowledgeable side effects in this study. Same findings also reported in Sweden damaged mucosa were among the lowest knowledgeable side effects [21]. The similarity might be due to a lack of knowledge on chemotherapy side effects.

Related to associate factors in the current study, knowledge was significantly associated with age. Age less than 45 years old had lower chemotherapy knowledge when compared to age greater than 45 years old and also patients who were living in Addis Ababa were significantly associated with the level of knowledge, they had higher knowledge when compared to those who came from outside of Addis Ababa. Women who live in the city have more awareness than those who lived outside the city. The finding was inconsistent with the findings in Iraq where occupation and level of education were significantly associated with knowledge [22]. In a study finding in the USA Socio demographics such as age, level of education, occupation, and the number of chemotherapy cycles were not associated with chemotherapy knowledge [23]. The difference could be due to the different geographical areas of the studies and socio-demographic differences. Participants who lived in Addis Ababa had higher knowledge in this study this may be due to the urbanization of the city and participants may have better exposure to different information regarding chemotherapy. Regarding the experience of chemotherapy, this study showed that 53.2% of participants had the worst experience. The same findings were reported in Japan from the study participants more than half of the patients had the worst experience [24]. In this study hair loss was reported as the worst side effect followed by nausea and vomiting, low energy and fatigue, and tiredness. The same result was reported regarding hair loss it was considered the worst symptom they were experiencing [25]. Similarly, a study was done in Malaysia [26]. Nausea and vomiting were experienced by more than two-thirds of the participants. In this study mouth, sore was among the most tolerable side effects. Same findings were reported in Sweden mouth sore was among the tolerable side effect [21].

This study also revealed that on multivariate regression, the number of chemotherapy cycles was significantly associated with the experience. Patients who took chemotherapy for three to six cycles had a less tolerable experience when compared to other cycles. The same findings were reported in Canada [27]. Marriage was significantly associated with experience, participants who are currently single had a less tolerable experience when compared to those married. The time it takes to get to the hospital was significantly associated with experience; the time it takes to get to the hospital three to six hours has a tolerable experience when compared to others. The findings were inconsistent with the study in Tanzania where pain and financial problems are associated [28]. In Uganda patients' experience is associated with the information they received before starting

chemotherapy [15]. This may be due to differences in research methodology and differences in socio-demographic characteristics of study participants.

In conclusion, the study revealed that more than half of the participants were not knowledgeable and more than half of the participants had the worst experience. The age of participants less than 45 and participants who lived in Addis Ababa was found to be significantly associated with knowledge of chemotherapy and the distance it takes to get to the hospital, marital status of the respondent, and chemotherapy cycle was found to be significantly associated with patient's experience. Those who are aged less than 45 years had lower knowledge when compared to age greater than 45 years and those who are living in Addis Ababa were more likely to have higher knowledge and participants that took three to six hours to get to the hospital were more likely to have tolerable experience and those who took chemotherapy fourth to sixth cycle and respondents who are currently single were less likely to have tolerable experience. This suggests that health care providers need to design knowledge-increasing interventions and minimize patients' worst experiences. The study recommends to the government, especially the federal ministry of health should provide information on breast cancer treatments, side effects of the treatments, and how to minimize the possible side effects by using different Media, and health care providers should give information about chemotherapy to their patients in each cycle and should teach how to manage the possible side effects and also further studies regarding on breast cancer should be carried.

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Authors' Contribution

The paper is the result of joint research, and the contribution of every author is comparable to the others. KA searched the literature, trained field researchers for data collection wrote draft results and reviews of the manuscript and participated in the data analysis, interpretation, and review of the manuscript for publication. TG, YA, and TA data analysis Conceptualized the paper (report) and Manuscript preparation and other necessary document preparation for publication. All authors read and approved the final manuscript.

Ethics Approval and Consent to Participate

The study was conducted following the declaration of Helsinki. Ethical clearance and approval were obtained from Tikur Anbessa Specialised Hospital and Saint Paul Hospital Millennium Medical College ethical review Committee After explaining the procedure benefit and risks of the study in detail informed verbal consent was sought from all study participants. All the participants were reassured of the anonymity and a personal identifier was not used.

Availability of data and materials

Datasets are available from the corresponding author on reasonable request. It is deposited in the Library of Addis Ababa University and is made available to the user under the rules of the library.

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Funding for this study was not provided by any institution or agency, but some stationery items like A4 size papers for duplication of data collection interview questionnaire, pencils, and research advisor assignment offered by the Addis Ababa University postgraduate office.

Disclosure

All the authors do not have any possible conflicts of interest.

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