



# Treatment Adherence and Its Associated Factors among Cancer Patients Receiving Chemotherapy at a Tertiary Cancer Center in Chitwan, Nepal

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## ABSTRACT

### Background

Cancer is a major public health problem and leading cause of morbidity/mortality worldwide. Chemotherapy is one of the main treatment modalities for cancer management. The objective of study was to find out the treatment adherence and associated factors among cancer patients receiving chemotherapy.

### Methods

A cross-sectional study was carried out to assess treatment adherence and associated factors among cancer patients receiving chemotherapy. In this study 100 cancer patients were included. Non probability purposive sampling was used to select the sample and data was collected by structured interview schedule and analyzed by using SPSS 22.

### Results

This study revealed mean age of participants was 49.21 years, 60% of the respondents were female, 40% were from Janajati and 87% belongs to Hindu religion, 63% of the respondents were receive fourth or more chemotherapy cycle and 40.62% missed chemotherapy due to sickness. Majority 98% of the respondents had get therapeutic communication, 18% missed chemotherapy due to holiday. 51% of respondents had medium level of adherence, 49% respondents had low level of adherence and none of the respondents had high level of adherence. There was no association between treatment adherence with demographics variables.

### Conclusions

This study concluded cancer patients had a low level of adherence on treatment. The factors related to low adherence are forgot chemotherapy cycle, self-stopped chemotherapy, long-travel, symptoms relief, inadequate therapeutic communication, lack of social support, chemotherapy side effects, financial problem, government holiday and unavailability of bed. concerned authorities need to emphasis on treatment adherence awareness, supportive program to public and address to strengthen treatment adherence.

**Keywords:** Cancer; Chemotherapy; Treatment; Adherence.

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## INTRODUCTION

Cancer is a group of diseases which occurs when cells in the body starts to grow out of control and spread to other parts of the body result in death if not controlled. It significantly contributes to the overall global disease burden.<sup>1</sup> According to WHO definitions of adherence from Haynes and Rand the degree of person's behavior matches agreed-upon recommendations from a health-care provider about instructions regarding medication intake, medical device use, diet, exercise, lifestyle changes, rest and attendance at scheduled appointments.<sup>2</sup> Chemotherapy adherence factor is closely related to patient related, therapy-related, condition-related, health-care system and socioeconomic.<sup>3</sup> Chemotherapy adherence involves a collaborative effort and silent comprehension between care providers and patients compliance in day-to-day treatment such as dose, frequency, duration and cessation of therapy.<sup>4</sup> Adherence to cancer treatment is essential for achieving optimal health outcomes. Patients are vulnerable to adverse drug reactions for a variety of reasons, including poor drug adherence and clinical conditions.<sup>5</sup> Retrospective study on 5,861 women with breast cancer found of women adhered to hormone therapy were 76.3%.<sup>6</sup> The objective of study was to find out the treatment adherence and associated factors among cancer patients receiving chemotherapy.

## METHODS

A cross-sectional study was carried out to assess the Treatment adherence and associated factors among cancer patients receiving chemotherapy at Tertiary Cancer Center of Nepal. Altogether 100 cancer patients receiving chemotherapy were included in the study. Non probability purposive sampling was used to select the sample and data was collected with cancer patients receiving chemotherapy by structured interview schedule. The level of treatment adherence was assessed based on 8-item Morisky Medication Adherence Scale (MMAS-8) which was classified on three categories Low adherence (>2) Medium adherence (1 or 2) High adherence (0).<sup>9</sup> Obtained data were analyzed by using SPSS 22. The validity

of instrument was maintained by consulting with subject matter expert and reliability was maintained by pretesting 10% of estimated population in the same setting. Those samples were excluded from the main study. Instrument was prepared and used in Nepali language. Data was collected on 21 April to 3 May 2024. Ethical permission was taken from BP Koirala Memorial Cancer Hospital Institutional Review Committee (Ref No-4108/082). Informed consent was taken from the patients before data collection procedure.

## RESULTS

There were 100 respondents. Regarding the age, most of the respondents 61% were in age group 50-60 and 6% were in 20-30 age group. The youngest respondent was 20 years old and the oldest was 58. The average age was 49.21 years, with a standard deviation of 9.694. Majority of the respondents 60% were female. Like that 40% of the respondents were belongs to the Janajati community and majority of the respondents 87% were belongs to Hindi religion. The majority of the participants 81% were married. The majority of respondents 73% were belongs to joint family. In personal habits, 31% respondents were involved in smoking, 6% in Alcohol, 2% in Tobacco, and only 3% in all habits. Regarding the residence of respondents 27% from the madhesh province and only 6% were from sudurpaschim. The more than half of the respondents 54% had no education and fewer participants 2% had more than higher secondary education. A significant proportion 64% participant's occupation had agriculture and only 2% were in sales and services. Regarding family income 59% participants had adequate income for 1 year and 41% participants had inadequate for a year.

The majority of respondents 93% were forgot to take chemo cycle sometimes. The respondents 16% had not take chemo cycle over past 1 month. The participants 17% had stopped chemo cycle without telling doctor. The respondents 5% only forgot to take chemo cycle during travel. Near to third quartile 70% respondents had taken all chemo cycle on time.

Only 1 % participants stopped chemo due to feeling of symptoms relief. The majority of respondents 70% had felt hassled about treatment plan. All of the respondents 100% had difficulty to remember cycle once in a while/sometimes/usually or all (Table 1).

<b>Table 1. Respondent's treatment adherence regarding chemotherapy cycle (n=100).</b>	
<b>Variables</b>	<b>Frequency (%)</b>
<b>Sometimes forget to take chemo cycle</b>	
Yes	7 (7)
<b>Any cycle did not take over past 1 month</b>	
Yes	16 (16)
<b>Stopped cycle without telling doctor</b>	
Yes	17 (17)
No	83 (83)
<b>Forget to take chemo during travel</b>	
Yes	5 (5)
No	95 (95)
<b>All chemo cycle on time</b>	
Yes	70 (70)
No	30 (30)
<b>Sometimes stop chemo when feel symptoms relief</b>	
Yes	1 (1)
No	99 (99)
<b>Ever feel hassled about treatment plan</b>	
Yes	70 (70)
No	30 (30)
<b>How often do you have difficulty to remember cycle</b>	
Never/rarely	-
Once in a while/ Sometimes/ Usually and all	100 (100)

Regarding respondents disease related factors, majority of participants 88% had not reported a family history of cancer. The stage of disease categorized I, II, III, and IV were 18%, 29%, 40% and 13% respectively. Most of respondents 28% were diagnosed with gastrointestinal cancer, and only 1% had musculoskeletal cancer. A significant proportion 35% participants had a comorbidities. And a significant proportion 63% of the respondents were from fourth and more than four chemo cycle. Regarding respondents' medication related factors, all of the respondents 100% had experienced the side effects of chemotherapy. More than third quartile

79% respondents experienced alopecia, whereas nausea 63%, loss of appetite 81%, constipation 15% and diarrhoea 18%. Majority of participants 96% had experienced fever, and 92% experienced weakness. Almost participants 99% were utilized free of charge for primary funding source. All of the respondents 100% had utilized out of pocket money. A significant proportion 68% participants had experienced missing chemotherapy, the reasons for missed chemotherapy cycle were 13% due to sickness, 4% due to financial cause and 1% due to chemo side effects and lack of bed respectively. Almost all of the participants 98% had got therapeutic communication, and 97% were getting chemo cycle on time from hospital. The half of the respondents 51% had to travel more than 7 hours to reach hospital. Most of the respondents 84% were satisfied with social support. The participants 18% had missed some chemo cycle due to government holiday. More than third quartile 78% respondents were getting bed properly when going to take chemo-cycle.

The half of the respondents 51% had medium treatment adherence whereas low adherence was shown by 49% of the respondents (Table 2).

<b>Table 2. Level of treatment adherence among respondents (n=100).</b>	
<b>Level of adherence</b>	<b>Frequency (%)</b>
Low	49 (49)
Medium	51 (51)
High	-

<b>Table 3. Factors related to low adherence (n=49).</b>	
<b>Variables *</b>	<b>Frequency (%)</b>
Forgot chemo cycle	7 (14.28)
Self stops chemo cycle	17 (34.69)
Travel	5 (10.2)
Symptom relief	1 (2.04)
Chemotherapy side-effects	14 (28.57)
Financial problem	4 (8.16)
Lack of time	3 (6.12)
Inadequate therapeutic communication	2 (4.08)
Lack of Social support	16 (32.65)
Government holiday	18 (36.73)
Not availability of bed	22 (44.89)

\*Multiple response

Among them, 14.28% of the respondents forgot chemo cycle, 34.69% self stopped chemo cycle, 10.2% of the respondents missed chemo cycle due to travel outside, 2.04% missed chemo due to symptom relief, 28.57% due to chemotherapy side effects, 8.16% due to financial problem, 4.08% respondents had got inadequate therapeutic communication, 32.65% had lack of social support. Like wise, 36.73% of the respondents missed chemo due to government holiday whereas, 44.89% reported unavailability of hospital beds (Table 3).

## DISCUSSION

This study was conducted to identify treatment adherence and associated factors among cancer patients receiving chemotherapy at Tertiary Cancer Center of Nepal. In this current study, the analysis of socio-demographic variable revealed that among 100 respondents, majority 61% respondents belong to age group of 50-60. The mean age and standard deviation of respondents was  $49.21 \pm 9.694$ . Regarding gender, majority 60% of the respondents were female. Similarly maximum 81% of respondents were married. Likewise, 31% of respondents had smoking and 6% had alcohol habits. Among them 2% respondents were from more than higher secondary and majority 64% respondents' occupation were agriculture. A similar study was conducted by Kumar J, Gudhoor M, Ganachari MS. In india showed that 30% respondents belongs to age group  $>50$  and majority 55% were female.<sup>11</sup> Likewise, this research was supported by the study conducted in Region, Northeastern Ethiopia which showed that the mean age and standard deviation of respondents was  $48 \pm 15.80$  and majority 67% of the respondents were married. Regarding personal habits 40.6% respondents had smoking and 52.7% had alcohol habits whereas 13.4% respondents were from more than higher secondary and majority 20.8% respondents were farmer.<sup>10</sup> Regarding treatment adherence on chemotherapy cycle showed that 7% of the respondents sometimes forgot to take chemo cycle, 16% respondents did not take any cycle over past 1 month. And 17%

respondents stopped cycle without telling doctor, 5% respondents forgot to take chemo cycle during travel. Among them 70% respondents took all chemo on time and 1% respondent sometimes stop chemo when feel symptom relief. And 70% respondents felt hassled about treatment plan whereas 100% respondents had difficulty to remember cycle once in a while/sometimes/usually and all. The findings of the study were inconsistent with the study findings conducted in Tabriz, North west of Iran which showed that 65.9% of the respondents sometimes forgot to take chemo cycle, 66.9% respondents did not take any cycle over past 1 month. And 69.9% respondents stopped cycle without telling doctor, 73.4% respondents forgot to take chemo cycle during travel. Among them 19.1% respondents took all chemo on time and 55.3% respondent sometimes stop chemo when feel symptom relief. And 94.7% respondents felt hassled about treatment plan. And 18% respondents had difficulty to remember cycle never/rarely, 41.2% once in a while, 26% sometimes, 9.4% usually whereas 5.3% all the time.<sup>26</sup> The study revealed on disease related factors were, 12% of the respondents had family history of cancer and majority 40% of 3rd stage of cancer. Among them highest 28% respondents had Gastrointestinal cancer whereas respondents of fourth and more than four chemo cycle were 63%. This finding was inconsistent with the results of Region, Northeastern Ethiopia which showed 42% of the respondents had family history of cancer, majority 39.7% had fourth stage of cancer, and highest 26.3% had breast cancer. Among them 35% respondents had comorbidities which was consistent with the results of Region, Northeastern Ethiopia showed that 35.1% had comorbidity.<sup>10</sup>

The findings of the study on medication related factors showed that all 100% respondents had complained of side effects of chemotherapy. Among them 99% utilized free of charge government service whereas 100% respondents utilized out of pocket money. This finding was consistent with the study conducted by Region, Northeastern Ethiopia which found that majority 89.4% of the respondents

had complained of side effects of chemotherapy and 71.4% utilized free of charge government service. Among them 100% respondents utilized out of pocket money which was inconsistent with the study findings by Region, Northeastern Ethiopia 20.8%.<sup>10</sup> In terms of health care system related factors, study found that 51% of the respondents had to travel >7 hours to reach hospital. This finding was consistent with the study findings conducted by Ethiopia that 43.6% of the respondents had to travel >7 hours to reach hospital. Among them majority 98% of the respondents had got adequate therapeutic communication and majority 84% satisfied with social support. This finding was not consistent with the findings of Ethiopia which showed that 26.1% of the respondents had got adequate therapeutic communication and majority 95.8% satisfied with social support.<sup>10</sup>

The study findings revealed that the level of treatment adherence was near about half 49% had low adherence. This finding was supported by Kumar J, Gudhoo M, Ganachari MS. In india which showed that 57.8% of the respondents had low adherence. Among them more than half 51% of the respondents had medium adherence and no one had high adherence. This finding was not supported by Kumar J, Gudhoo M, Ganachari MS. In india which showed 26.7% had medium adherence and 15.6% had high adherence.<sup>11</sup>

The study findings showed that on factors related to low adherence were due to lack of social support 32.65%, inadequate therapeutic communication (4.08%), due to forgot chemo cycle 14.28%, self stop chemo cycle 34.69%, symptom relief 2.04%, government holiday 36.73% and not availability of bed 44.89%. This findings was in contrast with previous research conducted by Kumar J, Gudhoo M, Ganachari MS. In india showed that the related

factors for low adherence were adverse drug reaction 30.44%, less tolerability to medication 5.79%, absence of care taker, negligence 13.04% and lack of knowledge about therapy 8.69%.<sup>11</sup>

## CONCLUSIONS

This study concluded that the factors related to low adherence are forgot chemo cycle, self stopped chemo cycle, travel, symptoms relief, Inadequate therapeutic communication, lack of social support, and Government holiday and not availability of bed. So concerned authorities need to emphasis on treatment adherence awareness, supportive program to public and address to strengthen treatment adherence.

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**Availability of data and materials:** All data analysed during this study will be made available upon reasonable request from the corresponding author.

## Authors' contributions

**Conceptualization:** Mrs. Sabita Panthee.

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