

## ORIGINAL ARTICLE

# Nurses' practices in targeted therapies in Turkey

Sultan Kav<sup>1</sup>, Sevcan Atay<sup>2</sup>

<sup>1</sup>Baskent University Faculty of Health Sciences, Department of Nursing, Ankara; <sup>2</sup>Ankara University Faculty of Health Sciences, Department of Nursing, Ankara, Turkey

## Summary

**Purpose:** The number of targeted agents has increased over the last years. The aim of this study was to explore the current practice and knowledge of nurses about targeted therapies and to identify the gap in their management in Turkey.

**Methods:** Nurses who attended to the oncology nursing educational programs organised by the Turkish Oncology Nursing Association were invited to participate. A total of 187 nurses from 29 cities responded. Data were collected via a 30-item questionnaire on demographics and knowledge and practices on targeted therapies. Following this survey nurses were invited to participate in 'target' courses.

**Results:** More than half of them (57.2%) stated they were willing to receive information on targeted therapies, mostly

through in-service education (32.7%). Also, most of them were partly (67.3%) or not satisfied (24.3%) with their knowledge. Only few explained what targeted therapies are and how they work. While most of them responded correctly about how and where to store targeted drugs, few (1.8%) wrote that these agents should be stored in freezer. The majority stated that targeted agents should be prepared like the chemotherapy drugs.

**Conclusions:** Lack of knowledge may cause errors and influence drug effectiveness. Nurses need to be supported with information. This survey revealed the needs in nursing practice over targeted therapies, side-effects and management.

**Key words:** cancer, monoclonal antibodies, nursing management, targeted therapies

## Introduction

Targeted therapies, which include monoclonal antibodies and small molecule inhibitors, have significantly changed the treatment of cancer over the recent years [1]. Many of the targeted agents available for clinical use today are effective both as single agents and in combination with other therapies for a wide range of tumors [2]. These drugs are now a component of therapy for many common malignancies, including breast, colorectal, lung, and pancreatic cancers, as well as lymphoma, leukemia, and multiple myeloma [1,3]. Potential advantages of targeted agents include lower systemic toxicities because, unlike cytotoxic chemotherapy, these agents are selective for their targets [4].

Molecular targeted therapies are providing

new treatment options with more favorable toxicity profiles, resulting in improved quality of life. With progress in drug therapy comes a new challenge for oncology nurses to understand the mechanisms of action of targeted therapies [5]. Nurses are in a key position to assess and intervene as adverse effects present in patients receiving targeted therapy. Nurses have a significant role to play in patient education, assessment, intervention and evidenced-based recommendations in order to meet the patient's needs. Patients usually approach nurses with their questions, symptoms and concerns [6].

Nurses must be knowledgeable about the mechanism of action of targeted therapies and the rationale for their use in treatment, so that to provide optimal nursing care. They are also responsible for knowledge about targeted agents

and should communicate this knowledge to their patients. Patients armed with information about drugs' mechanisms of action and rationale for use demonstrate higher probability of adherence and lower probability of treatment-limiting toxicity [5,7,8].

As healthcare professionals, nurses are obliged to know not only what treatments they administer and how these can affect patients, but also how they work. Nurses have a range of responsibilities for the patient receiving targeted therapies such as storing, handling, preparing and administering the targeting agent, monitoring the side-effects, being able for symptom management, and help patient and family education [8].

The aim of this study was to explore the current practice and knowledge of nurses about targeted therapies and to identify the gap in management in Turkey.

## Methods

Data were collected via a questionnaire developed by researchers based on the relevant literature. The questionnaire consisted of a 4-page, self-administered 30 items with both fixed-choice and open-ended questions on demographic and professional characteristics (institution, educational status, place of work, position, working years in this clinic, and years in nursing), knowledge, experience and practices (the most commonly used targeted agents, availability of policy/guidelines for administration, education on targeted therapies), management of toxicities and side effects. The questionnaire was pre-tested in a group of 10 nurses. A convenience sample of nurses was obtained from those nurses who attended educational programs organised by the Turkish Oncology Nursing Association. The participants first received a detailed explanation about the study and were given the option of completing the questionnaire. A total of 187 nurses from 29 different cities in Turkey responded. Following this survey nurses were invited to participate to the European Oncology Nursing Society (EONS) 'target' courses run by the National Oncology Nursing Societies which are members of EONS [9].

### Data analysis

SPSS version 15.0 (SPSS Inc., Chicago, IL, USA), was used to conduct data analysis. Percentages and means were used to illustrate the descriptive properties of demographic characteristics. The open-ended questions were grouped into themes and summarized as percentages.

### Ethical considerations

This study was approved by the Baskent Univer-

**Table 1.** Characteristics of the nurses (N=187)

Institution	N	%
University Hospital	84	44.9
State Hospital	57	30.5
Private Hospital	46	24.6
Position		
Staff /Clinical Nurse	130	69.5
Head Nurse	49	26.2
Educator	8	4.3
Place of work		
Inpatient		
Ambulatory/Day Clinic	98	52.4
Outpatient	82	43.9
Doctor's office	5	2.6
	2	1.1
Education		
Diploma	30	16.1
Associate (2-year education)	58	31.0
BSN*	90	48.1
Master	9	4.8
Time worked in this clinic, years (3.94 ± 4.38, range:1-23)		
< 1	73	39.0
2-5	78	41.7
6-10	16	8.6
11 -15	12	6.4
16 and over	8	4.3
Time worked in nursing, years (10.01 ± 7.05, range:1-32)		
< 1	8	4.3
2-5	58	31.0
6-10	44	23.5
11 -15	38	20.3
16 and over	39	20.9

\*Bachelor of Science in Nursing

sity Institutional Review Board and Ethics Committee. Permission to undertake this study was obtained from the Turkish Oncology Nursing Association Board and oral informed consent was obtained from each participant. Nurses were assured of their right to refuse to participate, or to withdraw from the study at any stage.

## Results

Analysed were responses from 187 nurses. The majority worked in University Hospitals (44.9%) or State Hospitals (30.5%), as clinical nurses (69.5%) and had a bachelor degree in nursing (48.1%). The mean number of years in nursing was about 10 years (range 1-30) and the mean number of working years in oncology was 3.4 years (range 1-23) (Table 1).

More than half (57.2%) stated that informa-

**Table 2.** Education on targeted therapies and sources of education

	N	%
Previous education on targeted therapies		
Yes	107	57.2
No	80	42.8
Sources of education (N=107)*		
In-service education	71	32.7
Book/Journal/Newsletter	54	24.9
Scientific meeting (congress, conference, etc.)	33	15.2
Internet	27	12.4
Basic education	26	12.0
Hands on practice	6	2.8
Perceived satisfaction with education (N=107)		
Yes	9	8.4
Partly	72	67.3
No	26	24.3
Availability of in-service education on targeted therapies in their institution(N=187)		
Yes	56	29.9
No	131	70.1
Availability of guideline on targeted therapies in their institution (N=187)		
Yes	79	42.3
No	108	57.7

\*Multiple responses received

tion on targeted therapies came mostly through in-service education (32.7%); however, most of them were partly (67.3%) or not satisfied (24.3%) with their knowledge. The majority stated lack of in-service education (70.1%) and protocol/practice guideline specifically for targeted therapies (57.7%) (Table 2). Only few (6.9%) explained what targeted therapies are and how they work.

Nurses' practices on targeted therapies are presented in Table 3. The mean number of targeted agents administered by nurses was 4 (range 1-10) and nearly half of the nurses were administering targeted therapies every day (48.1%). When examined their practices on storing and handling, most of them responded correctly about how and where to store targeted drugs; however few (1.8%) responded that they were storing in freezer. The majority stated that they were preparing drugs targeted agents like chemotherapy drugs. Infusion-related reactions, flu-like symptoms and skin reactions were cited as the side effects mostly seen. More than half (61.2%) encountered hypersensitivity/allergic reactions; 63.6% of them recorded the reactions on the nursing care form or adverse event form. Administering premedication (52.3%) and having emergency drugs and equipment readily available (45.7%) were meas-

ures mostly used for the management of such reactions (Table 3).

Responses on the recommendations to patients for the management of side effects by nurses are displayed on Table 4. Nearly one in third of the nurses responded to this question. Of them, more than half stated that they were informing patients about side effects (58.6%) and alerting to report any unusual symptoms immediately (24.1%) (Table 4).

## Discussion

This study reports the knowledge and practices in relation to targeted therapies of nurses working in oncology clinics from 29 different cities in Turkey. Studies on this subject are limited and this study can be taken as reference for other countries. The results of this study revealed that more than half of the nurses received such an education, however only few rated their knowledge as satisfactory and the majority underlined the lack of in-service education in their institutions. A recent study conducted at a large University Hospital with 40 nurses from hematology/oncology units showed that the majority (77.5%) had not received a specific education about biotherapy and suggested to include such an education into post-basic educational programs [10].

Targeted therapies represent a relatively new class of antineoplastic agents and create unique challenges and opportunities for oncology nursing practice. The oncology nurse plays a critical role in helping patients to understand the various treatment options and to facilitate discussions with the treating physician. He/she can clarify the differences between the various categories of therapies; let the patient know what to expect of his/her treatment both in terms of outcomes and side effects; teach the patient how to manage side effects at home; and guide the patient toward reliable sources of information and support [6,11,12]. However, in this study only one third of the nurses stated that they were informing patients about targeted therapies and their side-effects. This result may be directly related to lack of knowledge about targeted therapies. Nurses need to be knowledgeable about therapies and not only to administer drugs properly but also to ensure that patients are equipped with information about what to expect and how to manage side effects. Oncology nurses play a vital role in the management of side effects associated with targeted therapies and are in a unique position to provide patients with ongoing support, symptom assess-

**Table 3.** Nurses' practices on targeted drugs

How often do you administer targeted therapies (N=187)	N	%
Every day	90	48.1
2-3 times per week	29	15.5
Once a week	27	14.4
Once a month	6	3.2
Rarely	13	6.9
Never administered before	22	11.8
Where and how to store targeted therapies (N= 171)		
2-8 °C in the refrigerator	124	72.5
Same as chemotherapy drugs	34	19.9
According to each drug information	8	4.6
In freezer	3	1.8
At pharmacy department	2	1.2
Most commonly seen side effects (N=165)*		
Infusion-related reactions	105	32.8
Flu-like symptoms	92	28.7
Skin reactions	86	26.9
Hematologic	37	11.6
Total	320	100.0
Did you encountered hypersensitivity/allergic reactions?		
Yes	101	61.2
No	64	38.8
Do you document/record on a form? ( N=165)		
Yes	105	63.6
No	60	36.4
Measures for the management of side effects (N=165)*		
Administering premedication	139	51.3
Having emergency drugs and equipment readily available	124	45.7
Other (informing patient about possible side effect and monitoring vital signs)	8	3.0
Total	271	100.0

\*Multiple responses received

**Table 4.** Nurses' recommendations for the management of side effects

Management of side effects (N=71)*	N	%
Giving information to patients about side effects	51	58.6
Alerting to report any unusual feelings/symptoms immediately	21	24.1
Advice patient to take the prescribed medication	6	6.9
Drinking plenty of fluids	4	4.7
Others (resting, fresh air, try to be calm)	5	5.7
Total	87	100.0

\*Multiple responses received

ment and evidence-based recommendations in order to meet their needs. Because the treatment process often is long, nurses can provide support on the psychological, social, behavioral, and bio-

logic aspects of treatment [13,14].

Before or at the initiation of the first treatment cycle, nurses should provide information to patients on the toxicities that are likely to occur and teach them how to recognize and report early signs and symptoms. To avoid the development of severe side effects, patients should be encouraged to inform their healthcare team, usually by telephone, of early signs of side effects that do not resolve or even worsen within 24 hours. Nurses can also reinforce their understanding that dose reductions and treatment delays are expected [7]. In this study, only a limited number of nurses stated that they were alerting patients to report any unusual feeling/symptoms, showing a gap in practice.

In this study the majority (65.6%) stated that they were preparing targeted drugs the same way as chemotherapy drugs and responded correctly about how and where to store targeted drugs. In another study 90% of the nurses were knowledgeable about the storage, preparation and administration of biological agents [10]. Nurses should be knowledgeable about the efficacy, safety, and

proper administration of drugs within the frame of cancer care, including optimal treatment duration and stop/restart options in the event of adverse events [7,15].

The incorporation of targeted therapies into clinical practice is creating a new paradigm in the management of cancer. Alone or in combination with traditional therapies such as surgery, radiation, and/or chemotherapy, this new form of therapy targets malignant cells, halting tumor growth and the potential metastatic spread of disease. Toxicities are limited, but some are serious and require skilled nursing care. It is imperative for the nurses to have an understanding of these new treatment options and those on the horizon, as these therapies seem to

be the future of cancer care [2,6,12,15].

Lack of knowledge may cause errors and influence drug effectiveness. Nurses need to be supported with information. This study revealed the needs in nursing practice on targeted therapies, side effects and management.

## Acknowledgement

The authors would like to thank all nurses who participated to this study and the Turkish Oncology Nursing Association for support. Preliminary results of this study have been presented as poster at the 8th EONS Spring Convention; April 26-27, 2012; Geneva, Switzerland.

## References

1. Gerber DE. EGFR Inhibition in the Treatment of Non-Small Cell Lung Cancer. *Drug Dev Res* 2008;69:359-372.
2. Kay P. Targeted therapies: A nursing perspective. *Semin Oncol Nurs* 2006;22 (Suppl 1):1-4.
3. Grenon NN, Chan J. Managing Toxicities Associated With Colorectal Cancer Chemotherapy and Targeted Therapy: A New Guide for Nurses. *Clin J Oncol Nurs* 2009;13:285-296.
4. Chabner BA, Roberts TG. Timeline: Chemotherapy and the war on cancer. *Nat Rev Cancer* 2005;5:65-72.
5. Gardner N. Targeting the mTOR Pathway in Neuroendocrine Tumors. *Clin J Oncol Nurs* 2009;13:558-563.
6. Viele CS. Keys to Unlock Cancer: Targeted Therapy. *Oncol Nurs Forum* 2005;32:935-940.
7. Moore S. Facilitating oral chemotherapy treatment and compliance through patient/family-focused education. *Cancer Nurs* 2007;30:112-122.
8. Winkeljohn DL. Review of Panitumumab: A Targeted Therapy. *Clin J Oncol Nurs* 2008;12:30-32.
9. <http://www.cancernurse.eu/education/target.html> (Accessed date: 24.07.2014)
10. Ozcelik H, Tokem Y, Fadiloglu C et al. Examining the level of knowledge and practices regarding the use of biologic agents among nurses working in oncology and hematology clinics at a university hospital. *Turk J Oncol* 2012;27:10-16.
11. Carmen J. Neuroendocrine Tumors: Nursing Implications for Oral Targeted Agents and Patient Management: Part II. *Clin J Oncol Nurs* 2009;13:149-153.
12. Schmidt KV, Wood BA. Trends in cancer therapy: role of monoclonal antibodies. *Semin Oncol Nurs* 2003;19:169-179.
13. Gobel BH. Hypersensitivity reactions to biological drugs. *Semin Oncol Nurs* 2007;23:191-200.
14. Mick J. Factors affecting the evolution of oncology nursing care. *Clin J Oncol Nurs* 2008;12:307-313.
15. Marrs J, Zubal BA. Oncology nursing in a new era: optimizing treatment with bevacizumab. *Clin J Oncol Nurs* 2009;13:564-572.