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Influenza Vaccination for Cancer Patients: An Algerian Single Center Experience

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Abstract: Background: Viral infections are very severe infections and can be responsible for death, as is the case with influenza infection; which during a short period of spread can cause significant deaths in the general population, and in immunocompromised patients in particular; as is the case with cancer patients; weakened by the disease and viral infection too. Patients with cancer are at high risk of severe infections complications. Among people with immunosuppression due to chemotherapy, corticosteroid treatment, or immunotherapy, high rates of influenza infection and related complications are frequently observed. In Algeria, the influenza vaccine is recommended for people aged 65 and over, as well as for those with chronic medical conditions who are at high risk of complications. It is offered by the government free of charge to elderly and other risk groups and distributed through general hospitals and pharmacists. **Material and methods:** The medical oncology department of the Establishment DIDOUCHE Mourad, Constantine, launched a vaccination campaign for eligible patients, during the vaccination campaign initiated by the Algerian Ministry of Health during seasonal infection from October to December, each year. During two (02) months of medical oncology consultations (November 2024 to December 2024), 2047 patients were consulted and 264 patients were concerned by the vaccination. The findings emphasize the crucial role of healthcare professionals in advocating for influenza vaccination among cancer patients and the need for collaboration with health authorities to improve vaccination coverage. **Results:** For a total of 2047 patients consulted (whose 43 (2,10 %) were already vaccinated), 892 (43.57%) patients refused the idea of vaccination. 784 (38.29%) patients did not want to comment yet at the time of the consultation and preferred to continue their treatments, 53 (2.58%) were postponed for bone marrow aplasia. 11 (0.53%) patients had contraindications to vaccination including 3 (27.27%) egg allergy, 2 (18.18%) tuberculosis, 2 (18.18%) febril neutropenia ,2 (18.18%%) recent ischemic stroke (less than 20 days), 1 (9.09%) on treatment with Rituximab and 1 (9,09%) patient had a recent Guillan Barre Syndrom. (less than 6 weeks). 264 cancer patients ((12.89%) were included in the study of adherence to a vaccination campaign launched in medical oncology department of the hospital establishment DIDOUCHE Mourad, Constantine 189 (71.60%) patients were women and 75 (28.40%) patients were men. Different tumor localizations were noted. As a result, the influenza vaccination campaign coverage in our study was 13,17 % for all ages of cancer patients included and 48,86 % for those ≥ 65 years. **Discussion:** The influenza vaccination coverage was low among cancer patients. Influenza non-vaccination in the previous season was the strongest predictor of not receiving influenza vaccination in the current season. The main reasons for the low level of vaccination coverage rate that emerged in our study were having no-informations for indication to cancer patients (41,28%), fear of side effects (31,43%) getting medical treatment for cancer (chemotherapy, targeted therapy or

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immunotherapy) (9,46%), lack of efficacy (9,09%), and no-need (8,71%). Nevertheless, after having informations and advice by medical oncologists, all patients stated that they will get vaccine next year. **Conclusion:** Vaccination against influenza in patients with cancer is a serious issue that presents many challenges, mainly in association with the immunocompromised state of these patients. Owing to disease and/or treatment-associated immunosuppression, patients with cancer are vulnerable to infectious diseases and are at high risk of developing infection- related complications, including those associated with influenza. Vaccination against common preventable diseases, including seasonal influenza, is therefore highly recommended in these patients

Keywords: influenza vaccination; cancer patients; low; challenges

Background

Viral infections are very severe infections and can be responsible for death, as is the case with influenza infection; which during a short period of spread can cause significant deaths in the general population, and in immunocompromised patients in particular; as is the case with cancer patients; weakened by the disease and viral infection too [1]. Influenza poses a significant threat to cancer patients due to their compromised immune systems. Patients with cancer are at high risk of severe infections complications [2].

In Algeria, where seasonal influenza is prevalent with an annual incidence of 2 to 7 million cases is observed, the influenza vaccine is essential for protecting this vulnerable population who have higher complication and mortality rates than the general population.

Among people with immunosuppression due to chemotherapy, corticosteroid treatment, or immunotherapy, high rates of influenza infection and related complications are frequently observed

In addition, influenza can indirectly result in suboptimal oncological outcomes by resulting in treatment delays. Patients with cancer can be immunocompromised because of their disease and/or due to anticancer therapy. In this population, severe influenza virus infections are associated with an elevated risk of morbidity and mortality. Influenza vaccination is therefore highly recommended in cancer patients [3], including those receiving anticancer therapy. Despite efforts to promote vaccination, challenges related to adherence and access persist. It is imperative to enhance awareness campaigns and facilitate vaccine accessibility for all at-risk individuals [4].

In Algeria, the influenza vaccine is recommended for people aged 65 and over, as well as for those with chronic medical conditions who are at high risk of complications. It is offered by the government free of charge to elderly and other risk groups and distributed through general hospitals and pharmacists.

Material and Methods

The medical oncology department of the Establishment DIDOUCHE Mourad, Constantine, launched a vaccination campaign for eligible patients, during the vaccination campaign initiated by the Algerian Ministry of Health during seasonal infection from October to December, each year.

Some specialties other than medical oncology have been associated during this vaccination campaign; such as the endocrinology department to research, treat and prevent probable endocrine effects during vaccination, especially since some eligible cancer patients were under immunotherapy treatment and the side effects of this new therapy introduced in Algeria recently had to be managed with the utmost caution.

Also, the Department of Epidemiology and Preventive Medicine was involved in this study to facilitate the vaccination operation and monitor the statistics of adherence to influenza vaccination

During two (02) months of medical oncology consultations (November 2024 to December 2024), 2047 patients were consulted and 264 patients were concerned by the vaccination. The findings emphasize the crucial role of healthcare professionals in advocating for influenza vaccination among

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cancer patients and the need for collaboration with health authorities to improve vaccination coverage.

Results

For a total of 2047 patients consulted, 43 (2,10 %) were already vaccinated

Among these 2004 patients, 892 (44.51%) patients refused the idea of vaccination. 784 (39.12%) patients did not want to comment yet at the time of the consultation and preferred to continue their treatments, 53 (2.64%) were postponed for bone marrow aplasia. 11 (0.54%) patients had contraindications to vaccination, including 3 (27.27%) egg allergy, 2 (18.18%) tuberculosis, 2 (18.18%) febril neutropenia ,2 (18.18%%) recent ischemic stroke (less than 20 days), 1 (9.09%) on treatment with Rituximab and 1 (9,09%) patient had a recent Guillan Barre Syndrom. (less than 6 weeks).

264 (13,17%) cancer patients were included in the study of adherence to a vaccination campaign launched in medical oncology department of the hospital establishment DIDOUCHE Mourad, Constantine 189 (71.60%) patients were women and 75 (28.40%) patients were men. Different tumor localizations were noted.

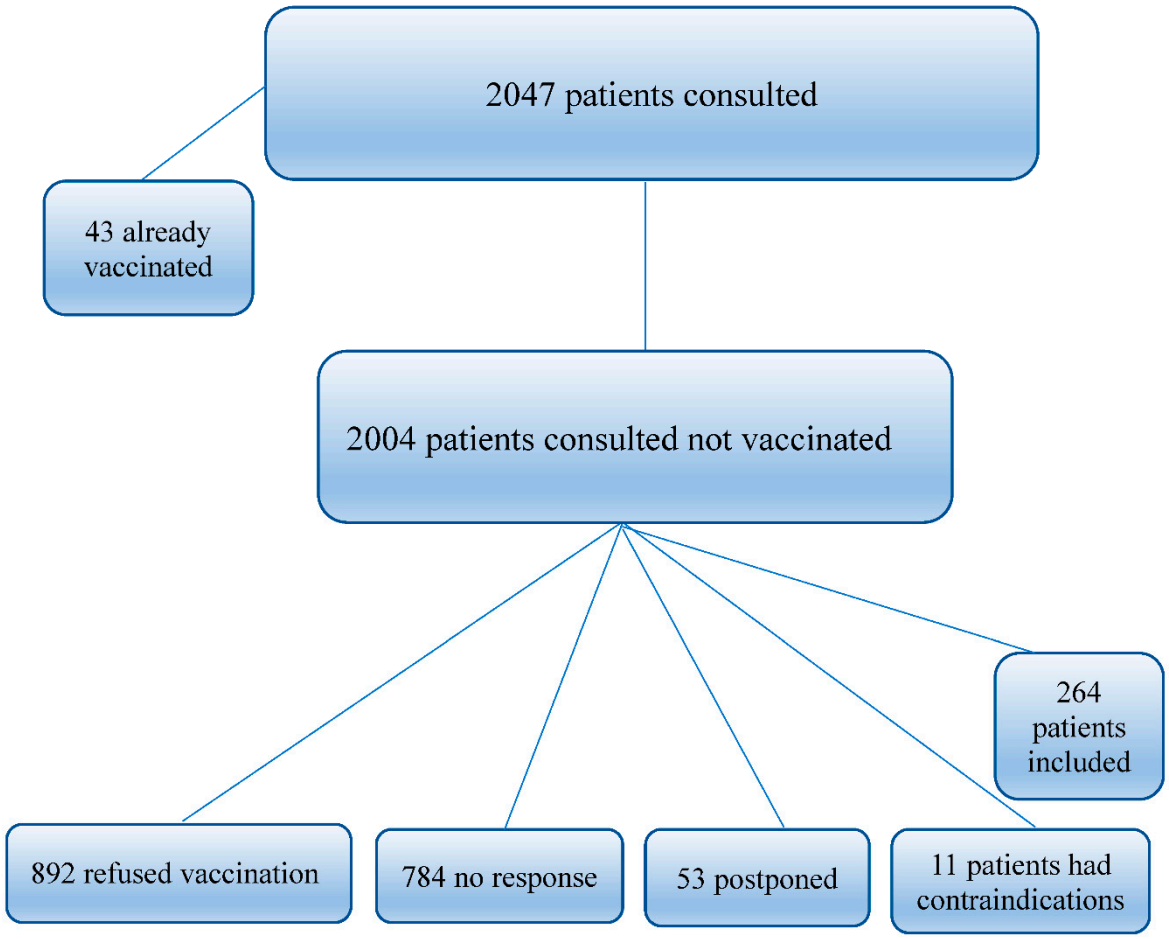

Figure 1. Characteristics of the consulted patients during the period of November 2024 to December 2024.

Table 1. Characteristics by sex.

SEX	N	%
WOMEN	**189**	**71,60**
MEN	**75**	**28,40**
TOTAL	**264**	**100%**

 doi:10.20944/preprints202503.0236.v1

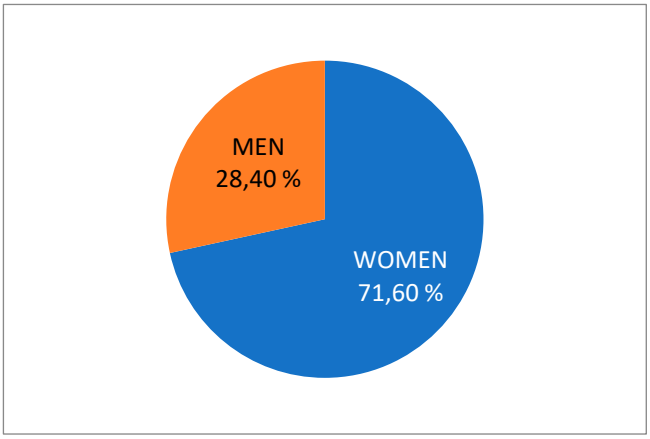

Figure 2. Characteristics by sex.

Table 2. Characteristics by age, group and sex.

Characteristics by age, group and sex				
Age range	**Women total**	**Men total**	**TOTAL**	**%**
18-24 years old	1	1	2	0,75
25-29 years old	2	1	3	1,13
30-34 years old	2	2	4	1,51
35-39 years old	8		8	3,03
40-44 years old	5	3	8	3,03
45-49 years old	13	1	14	5,30
50-54 years old	20	4	24	9,09
55-59 years old	30	7	37	14,01
60-64	21	14	35	13,25
65 years & more	87	42	129	48,86
TOTAL	189	75	264	100

Table 3. Tumor types of the vaccinated population.

Tumor types of the vaccinated population		
TUMOR TYPE	**N**	**%**
Breast	115	43,56
Colorectal	47	17,80
Prostate	18	6,81
Ovary	12	4,54
Lung	11	4,16
Sarcoma	9	3,4
Pancreatic	7	2,65
Gastric	5	1,89
UCNT	4	1,51
Testicular	3	1,13
Kidney	3	1,13

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Others (GIST, LNH, Bladder, Endometer	30	11,36

Among 264 patients enrolled, 244 (92,42%) were vaccinated in the medical oncology department, 3 (1.13%) patient accepted vaccination outside the medical oncology department and 17 (6.49%) refused vaccination despite their first agreement to be included in the vaccination campaign. Only one side effect (0.40%) was noted that of fever.

As a result, the influenza vaccination campaign coverage in our study was 13,17 % for all ages of cancer patients included and 48,86 % for those ≥ 65 years.

When this coverage was analyzed according to tumor type, patients with breast or colorectal had higher adherence than patients with other types of cancer (breast cancer: 43,56 % and colorectal cancer: 17,80 %).

Discussion

The influenza vaccination coverage was low among cancer patients.

Influenza non-vaccination in the previous season was the strongest predictor of not receiving influenza vaccination in the current season [5]

After discussion with patients who were enrolled in the campaign of the vaccination and their behaviors of vaccination, the results are below:

Table 5. Causes for not getting vaccinated.

Causes of non-vaccination	N	%
Fear of side effects	83	31,43
Lack of efficacy	24	9.09
No need	23	8,71
No-information	109	41,28
In -chemotherapy, or Immunotherapy	25	9,46
TOTAL	264	100

The main reasons for the low level of vaccination coverage rate that emerged in our study were having no-informations for indication to cancer patients (41,28%), fear of side effects (31,43%) getting medical treatment for cancer (chemotherapy, targeted therapy or immunotherapy) (9,46%), lack of efficacy (9,09%), and no-need (8,71%). Nevertheless, after having informations and advice by medical oncologists, all patients stated that they will get vaccine next year [6].

It is important to mention that none of the included patients had been hospitalized with a proven influenza infection in the influenza season

Oncologists, often the primary doctors of cancer patients, can possibly play a larger role in advising patients to get vaccinated.

Reasons given by physicians not to vaccinate their patients during chemotherapy are lack of awareness of the recommendations and concern about the efficacy of the influenza vaccination in patients with solid tumours treated with chemotherapy, targeted therapies or immunotherapy [6–8]. This is expected because of the absence of specific guidelines and the limited recent data available on the optimal timing of vaccination of cancer patients. More research has to be done to determine the exact burden of influenza in cancer patients population and also the medical oncologists who are reluctant to vaccinate their patients. There is a possibility that the vaccination rate of patients could be raised by the oncologist bringing up the topic of vaccination and giving advice on it [9,10].

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The Algerian's recommendation for influenza vaccination is unclear when it comes to cancer patients (cancer patients are not specifically mentioned) and the influenza vaccination coverage among cancer patients is also unknown.

Vaccination continues to be the main way to boost immunity against seasonal influenza in patients with cancer and the clinical benefits are needed in this population.

With a total safety, there is evidence to suggest that the timing of vaccination relative to a chemotherapy treatment cycle is crucial [11].

A notable finding of the vaccination campaign within the medical oncology department was a significant preference among patients to receive vaccinations on-site. This preference was attributed to the pre-existing physician-patient relationship characterized by trust and confidence. These patients reported apprehension due to perceived inadequate understanding of their specific needs by non-oncology vaccination teams.

Conclusion

Vaccines are the most powerful weapons against infectious diseases. Vaccinations are not only important for protecting individuals from diseases and their complications but also for limiting the circulation and transmission of pathogens [12]. Vaccination against influenza in patients with cancer is a serious issue that presents many challenges, mainly in association with the immunocompromised state of these patients. Owing to disease and/or treatment-associated immunosuppression [13], patients with cancer are vulnerable to infectious diseases and are at high risk of developing infection-related complications [14], including those associated with influenza. Vaccination against common preventable diseases, including seasonal influenza, is therefore highly recommended in these patients [15]. The results of the present study revealed that routine assessment of vaccination status and educational programs are needed for patients with cancer. This subject was beyond the scope of this study and needs to be researched in future studies. There is a potential for increasing the vaccination rate among oncological patients if oncologists advocate and give advice about the influenza vaccine. Influenza vaccination is the best strategy to protect cancer patients against this infection and has clearly shown to lower mortality and infection-related outcomes in this setting. Algeria is the first country in Africa to use seasonal flu vaccines, ensuring optimal protection for cancer patients. While the country has made significant strides in this area, efforts must be expanded to mandate vaccination for all individuals aged 50 and over. By getting vaccinated, cancer patients can help to improve their overall health and well-being. Further studies have to be conducted to assess the optimal timing of vaccination during chemotherapy [16]. Medical oncologists should be encouraged to actively inform about the need for influenza vaccination of their individual patients. There is an urgent need to greatly improve and intensify the quantity and quality of available information and education surrounding the effectiveness and safety of vaccines, targeting both the public and healthcare professionals.

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