International Journal of Medical Science and Education

An official Publication of Association for Scientific and Medical Education (ASME)

www.ijmse.com

Original Research Article

pISSN- 2348 4438 | eISSN-2349- 3208

IMMUNIZATION STATUS AND AWARENESS AMONG ELDERLY LIVING WITH DIABETES MELLITUS

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Received:28/05/2017 ***Revised:08/06/2018*** ***Accepted:13/06/2018***

ABSTRACT

Background: The prevalence of diabetes mellitus in the elderly population is increasing. Pneumonia is leading cause of death in older people for which diabetes is a major risk factor. The response to vaccines though is not cent percent in elderly population, it is said that an "ounce of prevention is worth a pound of cure". **Material & Methods:** The elderly patients attending the geriatric clinic and diabetes clinic of our institute were interviewed over a period of one month to know their immunization status after attaining 60 years of age and awareness among them regarding immunization schedule in the elderly population. **Results:** Out of 100 elderly participants, males constitute 59% and the young old (60 -74 years) constitute 94%.Thirty participants have been immunised against either Tetanus, Hepatitis, Pneumococcal, and Influenza after attaining 60 years of age. A total of sixty eight participants were not aware about immunisation schedule. Higher immunization rates are found in the people who are graduate and those are motivated by the clinicians to receive vaccines. The elderly living with diabetes of 5 to 10years duration have received more shots of vaccine. **Conclusion:** The study concludes that there is less awareness among the elderly and clinicians regarding immunization schedule for the elderly living with diabetes. The people living with diabetes are prone for communicable and community-acquired diseases which can be prevented to certain extent by immunization. In the era of transplantation and replacement surgeries, the elderly need to receive protective methods.

Keywords: Awareness, Diabetes Mellitus, Elderly, Immunization.

INTRODUCTION

The elderly population in India now constitute 9% of total population. The commonest non-communicable disease among the elderly population which has concerns as health issue globally is diabetes mellitus. According to one estimate, about a quarter of people aged 65 years or older are having type 2 diabetes mellitus. **(1, 2)**

The elderly population is prone for infectious diseases mostly pneumonia, influenza and herpes zoster as diabetes plays a role of the important risk factor in this set of population. The vaccines prescribed for elderly over sixty years are against influenza, herpes zoster, hepatitis B, tetanus, diphtheria and pneumococcal infections **(3)**.

Worldwide it is estimated that annual influenza epidemic are estimated to result in about 3–5 million cases of severe illness and about 250,000–500,000 deaths **(4)**. Severe morbidity and mortality during typical Influenza season occur among persons aged 65 years and those who have chronic medical

conditions like diabetes mellitus **(5)**. Pneumococcal infection can be prevented in people living with diabetes in whom the incidence is being higher than the general population with mortality rates as high as 50% **(6)**.

The immense necessity of influenza, tetanus and pneumococcal immunization in the elderly living with diabetes is extensively accepted but the vaccination rates are unsatisfactory or not up to the mark **(7,8)**. The elderly populations are more susceptible to hepatitis B although deaths due to acute infections are uncommon in the long-term care settings **(9)** and mortality rates of about 75% have been reported **(10)**. Tetanus is a dreaded disease of the nervous system in the elderly population, with 50% of cases of tetanus occurring in persons aged 65 years and older **(11)**.

The two best practices about immunization in elderly are noted in India. One is the Haj pilgrims need to be vaccinated against pneumococcal infection by compulsion before submitting their registration form. Secondly, the chest and general physicians are creating awareness among the patients with chronic obstructive pulmonary diseases and ensure to some extent that they get immunized against influenza and pneumococci.

The elderly population with diabetes are more prone for infectious diseases from bacterial and viral causes like influenza, pneumonia, tetanus, hepatitis B, and herpes zoster. The main reason being immunosenescence and immunocompromised states like diabetes, and malignancy. The environmental factors like overcrowding, smoking, and low socioeconomic status also predispose the elderly to communicable diseases. Now a days the elderly are undergoing transplant surgeries which predisposes them to hepatitis B infection.

The pneumonia in elderly with diabetes is among top ten leading causes of death worldwide. Increasing prevalence of these diseases are mainly due to lack of preventive measures being undertaken.

This study was done to know about the immunization status and awareness about immunisation in the elderly population living with diabetes mellitus.

Materials and Methods

This study was a hospital-based prospective study. A total of 100 elderly people irrespective of sex and educational status, living with Diabetes Mellitus who were attending Geriatric clinic (Every Wednesday) and Diabetic clinic (Every Thursday) of our hospital over a period of one month were randomly selected and were interviewed to answer a questionnaire which was prepared by the authors. The questions framed were to know the demographic profile, educational status, awareness regarding immunization schedule and status of immunization among the participants.

RESULTS

In the present study of 100 participants, males were 59% and females were 41%. The males constitute 54 % in young old (60-74 years), 4% in old(75 -84 years) and 1% in very old (>85 years) categories. The females constitute 40 % in young old and 1% in very old categories. (Table1). The oldest participant was 86 years old Male.

Table1: Age and Sex Distribution

Age (years)	Male	%	Female	%
60-74	54	54	40	40
75-84	04	04	00	00
>85	01	01	01	01
Total	59	59	41	41

The awareness about immunization in elderly was present in 21% of males and 11% of females constituting 32 % (Table2)

Table 2: Awareness about immunization

Sex	Not aware	%	Awareness present	%
Male	38	38	21	21
Female	30	30	11	11
Total	68	68	32	32

Participants who had undergone immunisation in the past few years but after the age of 60 years were 30, among which Males were 19 and females were 11 in number. (Table 3)

Table 3: Immunization status

Sex	No	%	Yes	%
Male	40	40	19	19
Female	30	30	11	11
Total	70	70	30	30

In our study, not a single participant had suffered from pneumonia in the past one year while one participant suffered from Hepatitis B and one participant from Herpes zoster in the past one year. (Table 4)

Table 4: History of immunization-preventable diseases

Diseases	Yes	%	No	%
Pneumonia	0	0	100	0
Hepatitis B	1	1	99	99
Herpes Zoster	1	1	99	99

In our study, the illiterate population comprised 9 % of which one was immunized. The participants who have studied upto tenth standard were 38% among which only seven were immunized, and thosewho studied greater than 10th standard were 25% among which 8 have been immunized. The participants who were graduate comprised 28% among which 14 had immunization. (Table 5)

Table 5: Education level and immunization status

Educational status	%	Males (%)	Females (%)	Immunized (%)	%
Illiterate	09	05	04	01	3.3
<10th	38	17	21	07	5.5
>10th	25	14	11	08	9.6
Graduate	28	23	05	14	15
Total	100	59	41	30	

The present study showed that 30 % of total subjects were immunised against multiple diseases. Of these 9% were immunised against Influenza, 23% were immunised against tetanus,10% against Hepatitis B and 2% subjects against pneumonia. (Table6)

Table 6: Details of elderly who are immunized.

Vaccine	Number(%)
Influenza	09
Tetanus	23
Hepatitis B	10
Pneumococcal	02
Herpes Zoster	00

The participants with duration of diabetes of less than five years were 43%, from five to ten years were 41 % and those living with diabetes for more than ten years were 16%. It is observed that shots of vaccine against two or more diseases was 19 in the people

with Diabetes of 5-10 years duration, followed by 17 shots in people having more than ten years duration, and 8 shots of vaccines in people with less than five years of duration of diabetes.

In our study 70% of the participants were on oral hypoglycaemic medication only, 20% were on insulin only and 10% had mixed medication, both oral drugs and insulin.

Our study shows that 4% of participants had awareness about immunisation among the 39% staying in the rural areas and 28 % had awareness about immunisation of the 61% staying in the urban areas.

DISCUSSION

In our study, 9 % of elderly living with diabetes received vaccination against Influenza and were mostly motivated by recommendation from the physician. In a study conducted by Heymann **(12)** et al. where they compared hospitalization and mortality rates in 15,556 patients with diabetics with age >65 years and found that vaccination against influenza was seen in 42.8%.In another study by Garcia **(13)** et al showed that 65.7% were vaccinated against influenza.

Two participants had received pneumococcal vaccine in our study. In a study done by Garcia **(13)** et al showed that 23.3% had received pneumococcal vaccine. Their study included 2288 subjects having respiratory illness and diabetes mellitus for a period of 7 years and being recommended by general practitioners. Hepatitis B vaccine was received by ten participants in our study while 34 % in a study by Williams et al **(14)**

In the present study 23% subjects were vaccinated against Tetanus and most of them were due to injury associated. In a study done by Sahin **(15)** et alfor a period of 4 months with 97 diabetic patients, tetanus immunisation was received by 9.28 % of participants.

In our study, the immunisation rates were 9 %, 23 %, 10%, and 2% for influenza , tetanus, hepatitis B, and pneumococcal infections respectively. In a study carried by Alvarez **(16)** et al involving 279 subjects with diabetes showed vaccination rates of 40%, 2% and 2% for influenza, pneumococcus, and hepatitis respectively. According to Koul **(17)** et al the immunization rates for influenza was 9 % and for pneumococcal was 8.8%. None of the participants has received vaccine against herpes zoster.

The emphasis needs to be drawn in particular on immunisation in the elderly populations with diabetes mellitus in order to reduce morbidity, hospitalization, financial burden on the family and finally the mortality rate especially in the developing countries like India.

Comparison with other studies

Immunisations	**Present study N=100**	**Sahin (15) et al N=97**	**Alvarez (16) et al N =279**	**Koul (17)et al N=1100**
1.Tetanus	23%	9.28%	Nil	Nil
2.Influenza	09%	38.1%	40%	9%
3.Pneumococcal	02%	13.4%	2%	8.8%
4.Hepatitis B	10%	Nil	2%	Nil
5.Herpes zoster	Nil	Nil	Nil	Nil

Limitations

The elderly population attending geriatric clinic who have been immunized in past against influenza were not included in this study as they did not attend the geriatric clinic during the study period. This has reflected less number of elderly though are immunized.

CONCLUSION

This study shows that most of the elderly people living with type 2 diabetes are not aware about immunisation schedule and their immunisation levels are much below the expected rates. The common barrier being lack of knowledge regarding the need for immunisation and lack of information and motivation from the clinicians. The elderly people with diabetes mellitus are more prone to various infectious diseases and their sequelae of complications. Hence elderly living with diabetes mellitus should be motivated and made aware about the immunisation schedule.

This in turn will reduce morbidity, hospitalisation, financial burden on the family and mortality rate globally. Our study may help the policy makers and health care providers to make new schemes in creating awareness on immunization in the elderly population living with diabetes, hence increasing coverage by targeting vulnerable population.

The geriatric clinic of our institute is creating awareness about immunization by organising awareness talks for senior citizens and clinicians. It also conducts immunization camps regularly for senior citizens to commemorate world immunization week in April (24 to 30) and world pneumonia day on November 12, every year. The acceptability is increasing every year as the vaccines are provided to the elderly at cost price directly from the dealer by maintaining cold chain. Influenza vaccination camps are organised in October first week with onset of winter season where in around 40 to50 senior citizens get immunized every year.

As on now, we do not have policy framework from the government of India regarding immunization in elderly. We recommend the immunization program called Indradhanush should be extended as Indradhanush– S (where "S" suggest seniors). The geriatric society of India has published Indian guidelines for vaccination in elderly and has submitted to Government of India in the year 2015, which needs to be implemented as part of health care system.

The authors are of opinion that all the employees of the government, bank, private, military and medical sectors should be immunized against influenza and pneumococcal on their day of retirement on a mandatory basis. Also, all the doctors must immunize their elderly parents apart from creating awareness among their patients. Such practices will help vast coverage of elderly population being immunized and will prevent vaccine preventable diseases which will benefit the family and the society at large. Among the participants, it was noticed that most of them were of opinion that the cost was not hinderance, instead awareness was.

Conflicts of Interest/ Competing Interests: NIL

Financial Assistance:NIL

REFERENCES

1. Kirkman MS, Briscoe VJ, Clark N, Florez H, Haas LB, Halter JB, et al. Diabetes in older adults. Diabetes Care. 2012;35(12):2650–64.
2. CDC. National Diabetes Fact Sheet, 2011 [Internet]. 2011. Available from: https://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf
3. Annals of Internal Medicine Clinical Guideline. Ann Intern Med. 2018;158(3):191–200.
4. Influenza (Seasonal) [Internet]. Available from: http://www.who.int/en/news-room/fact-sheets/detail/influenza-(seasonal)
5. Colquhoun AJ, Nicholson KG, Botha JL, Raymond NT. Effectiveness of influenza vaccine in reducing hospital admissions in people with diabetes. Epidemiol Infect. 1997;119 (3):335–41.
6. Smith SA, Poland GA. Use of influenza and

pneumococcal vaccines in people with diabetes.Diabetes Care. 2000;23 (1).

7. Wahid ST, Nag S, Bilous RW, Marshall SM, Robinson AC. Audit of influenza and pneumococcal vaccination uptake in diabetic patients attending secondary care in the Northern Region. Diabet Med. 2001 Jul;18(7):599–603.

8. Egede LE. Association between a number of physician visits and influenza vaccination coverage among diabetic adults with access to care. Diabetes Care. 2003;26(9):2562–7.

9. Thompson ND, Perz JF, Moorman AC, Holmberg SD. Nonhospital health care-associated hepatitis B and C virus transmission: United States, 1998-2008. Ann Intern Med. 2009;150(1):33–9.

10. Centers for Disease Control and Prevention (CDC). Notes from the field: deaths from acute hepatitis B virus infection associated with assisted blood glucose monitoring in an assisted-living facility--North Carolina, August-October 2010. MMWR Morb Mortal Wkly Rep. 2011 Feb 18;60 (6):182.

11. Tetanus surveillance: England and Wales, 1981-3. Vol. 290, British Medical Journal. 1985. p. 696–7.

12. Heymann AD, Shapiro Y, Chodick G, Shalev V, Kokia E, Kramer E, et al. Reduced hospitalizations and death associated with influenza vaccination among patients with and without diabetes. Diabetes Care. American Diabetes Association; 2004 Nov 1;27(11):2581–4.

13. Jiménez-Garcia R, Lopez-de-Andres A, Hernandez-Barrera V, Gómez-Campelo P, San Andrés-Rebollo FJ, de Burgos-Lunar C, et al. Influenza vaccination in people with type 2 diabetes, coverage, predictors of uptake, and perceptions. The result of the MADIABETES cohort a 7 years follow up study. Vaccine. Elsevier; 2017 Jan 3;35 (1): 101–8.

14. Williams RE, Sena AC, Moorman AC, Moore ZS, Sharapov UM, Drobenuic J, et al. Hepatitis B vaccination of susceptible elderly residents of long term care facilities during a hepatitis B outbreak. Vaccine. Elsevier; 2012 May 2;30(21):3147–50.

15. Sahin S, Tasar PT, Guclu YA, Sengul HS. Vaccinations Rates in the Elderly with Diabetes Mellitus. 2014;(September):293–6.

16. Alvarez CE, Clichici L, Patricia Guzmán-Libreros A, Navarro-Francés M, Ena J. Survey of vaccination practices in patients with diabetes: A report examining patient and provider perceptions and barriers. J Clin Transl Endocrinol. Elsevier; 2017 Sep 1;9:15–7.

17. Koul PA, Bhat MA, Ali S, Rahim S, Ahmad SJ, Ahmad S, et al. Short Communication : Influenza and Pneumococcal vaccination in patients with diabetes. 2014;(June):1–6.