Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v31i2.4330

THE VIEW POINT OF HEALTHCARE PROFESSIONALS ABOUT SWALLOWING DIFFICULTIES FOR MEDICATION IN PATIENTS

Fakhsheena Anjumj[l], Mirza Tasawer Baig[2*], Noor Jahan[3] , Sana Shamim[4], Sana Ghayas[5], Saima Mahmood[3], Moona Mehboob[4]

[1]Department of Pharmacy Practice, Dow College of Pharmacy, Dow University of Health Sciences, Karachi, Pakistan
[2*]Department of Pharmacy Practice, Faculty of Pharmacy, Ziauddin University, Karachi, Pakistan
[3]Department of Pharmacology, Dow College of Pharmacy, Dow University of Health Sciences, Karachi, Pakistan
[4]Department of Pharmaceutical Chemistry, Dow College of Pharmacy, Dow University of Health Sciences, Karachi, Pakistan
[5]Department of Pharmaceutics, Dow College of Pharmacy, Dow University of Health Sciences, Karachi, Pakistan

***Corresponding Author:** Mirza Tasawer Baig
*Department of Pharmacy Practice, Faculty of Pharmacy, Ziauddin University, Karachi, Pakistan

Abstract:
Patients often encounter swallowing difficulties for their medication and make amendments in the oral solid dosage formulations without informing the healthcare professionals. This may result in generation of adverse effects. Pharmacists can be the first point of contact in the community for people seeking advice about their medication whereas the doctors can consider about the swallowing capabilities of patients while prescribing medication. This study was aimed to assess the perceptions and practices of healthcare professionals regarding swallowing difficulties in patients and amendments in the medication for them. A descriptive, non-interventional, cross sectional study was conducted from December 2018 to March 2019. Structured and pretested questionnaires were distributed among doctors and pharmacists at their workplaces in Karachi, Pakistan. The researchers then collected completely filled questionnaires to analyze the data by using SPSS version 21.0. A total of 209 health professionals participated in the study among which 104 were pharmacists and 105 were doctors. 124 health professionals (doctors= 64, pharmacists= 60) asked patients about having any difficulty in swallowing solid oral formulations (p=0.040). Swallowing difficulty was mostly reported in elderly by 83 health professionals (doctors= 33, pharmacists = 50), and then in children by 40 health professionals (doctors= 29, pharmacists= 11) (p= 0.001). To overcome swallowing problem, 70 health professionals (doctors= 48, pharmacists = 22) recommended patients to have plenty of water while 63 health professionals (doctors= 29, pharmacists = 34) suggested to crush the tablet for consumption (p= 0.000). The patients were instructed by 46 health professionals (doctors= 09, pharmacists= 37) to use alternative dosage form in case of swallowing problem.
Conclusion: The healthcare professionals have different viewpoints related to medication practice and amendments in therapy in case swallowing issues arise for some patients. Some patients are habitual to amend their medication even when there was no need; also instruction is not taken from

healthcare professionals in this respect. Healthcare professionals should be ardent to educate patients about problems involving medication intake and amendments to be made in this regard.

Keywords: Solid Dosage Form, Swallowing Difficulty, Dosage Form Amendment, Healthcare Professionals

Introduction

The solid oral dosage form such as tablets and capsules, has always been the choice of patients because of its oral route of administration. The wide acceptability of these dosage forms is due to their cost-effectiveness, accessibility, dosing accuracy, easy handling and reliable quality (1). Those patients who are unable to swallow tablets, are used to modify the form by crushing or breaking the tablets, or splitting of capsule shells (2). This practice is very common without taking the recommendation from the healthcare professionals (3-4). Studies have shown that prevalence of such events among patients and care-givers were most common and the patients were unaware of the variations of doses due to such practices (5-7).

Dysphagia, or swallowing difficulties, is a rising challenge that affects ageing population due to physiological changes in the structure of the oropharyngolaryngeal space (8). According to World Gastroenterology Organization, dysphagia is commonly reported in 13% of the geriatric population aged 65 years and older, 40–70% in stroke patients, 60-80% in patients with neurodegenerative disorders such as dementia (9), and 60-75% in head and neck cancer patients who experienced any radiotherapy/surgical procedure (10). Consequently, the frequency of medication errors is three times more common in dysphagic patients as compared to those without swallowing complications (11).

The manipulation of the solid oral dosage forms can lead to some serious complications and possible harms to patients such as no palatability, reduced accuracy, efficacy and stability, enhanced toxicity and altered pharmacokinetics (3, 12). Therefore, any alteration in the solid oral dosage form can only be made when there is no appropriate substitute available or if the substitute poses a risk for the patient (13). Healthcare professionals can also recommend alternate route of administration, therapeutic substitution and confirming the presence of similar active pharmaceutical ingredient when compounded into another dosage form (12). The modification in the primary dosage form such as breaking, splitting, crushing or separating the capsules shells prior to administration has legal consequences and may affect the product licensing (14). Ultimately, the healthcare professional and the caregiver may become accountable for any harmful affect that occur because of the modified dosage form (15).

Patients usually do not inform their healthcare provider if they encounter any complications regarding swallowing oral medication (1) that will ultimately affect adherence to the therapy (16-17). Lau et al., studied that even though patients most often meet the pharmacists initially, it was found that more research is required aiming on viewpoints, experiences and knowledge of pharmacist towards dosage form manipulation (3). Mc Gillicuddy et al. performed meta-analysis of the qualitative literature on solid oral dosage forms amendment and reported that inter and intra-patient individuality and variability and case wise decision making process, affect the knowledge and attitude of healthcare professionals regarding dosage form alteration. This is due to the absence of communication between the healthcare staff and they emphasized that multidisciplinary evidence based decision-making should be made by healthcare professionals for solid oral dosage forms manipulation (18).

Methodology

This was a descriptive, cross sectional study, conducted for a period of 6 months using a pre-validated questionnaire, distributed amongst doctors and pharmacists, after having their informed consent to participate in the study. The participants were enrolled and were given adequate time to fill out the questionnaire, distributed by the research team, comprising of all the authors of the study. Completely filled questionnaires were then collected by the research team and were analyzed

using SPSS 21.0. For sample calculation, convenience sampling technique was used to recruit the participants. The sample size was calculated by using online Raosoft Calculator, assuming total of 400 pharmacists and general physicians working in renowned hospitals of Karachi. So, to attain a confidence level of 95% with 5% margin of error, a minimum of n=197 sample size was required (19). The structured questionnaire was prepared in English language which was pre-tested on n= 15 persons to measure the feasibility and validity. Afterwards, the questionnaire was finalized and the data from the pilot study was not included in the final analyses. The questionnaire was composed of items related to encounter of healthcare professionals with patients having swallowing problems and their practices to curtail such issues. This study was aimed to evaluate the perceptions and practices of healthcare professionals regarding swallowing difficulties in patiebts and amendments in the medication.

Results

A total of 209 health professionals participated in the study among which 104 (49.9%) were pharmacists and 105 (50.1%) were general physicians (Table 1). 64 GP and 60 pharmacists confirmed that they used to ask their patients about difficulty in swallowing a solid oral formulations. As per response from GPs (73.33%) and pharmacists (61.54%), swallowing difficulty was mostly reported in geriatric patients (Table 3). It was found that 56.69% Pharmacists (n=60) and 60.95% general physicians (n=64) had asked their patients about swallowing difficulties. It was also noticed that 50% Pharmacists (n=52) and 51.43% general physicians (n=54) responded that their patients had discussed about their swallowing difficulties with them (Table 2).

Discussion

This study has analyzed the views of healthcare professionals (doctors and pharmacists) regarding swallowing difficulties and recommendations to overcome this problem. The findings of this study highlight the variability in the responses and attitudes of doctors and pharmacists towards dysphagia. The doctors and pharmacist differed in their probability of modifying tablet/capsules for administration to patient with swallowing difficulty. Previous study discussed the responsibilities of healthcare professionals regarding knowledge, experience (24) (Schiele et al., 2013) and perception of dosage form manipulation. It was concluded that doctors and pharmacists are usually aware of the risks and adverse effects associated with alterations made in dosage forms for administration, a proactive discussion with patients and caregivers can prevent these events (25) (Lau et al., 2013).

Whether the patients ever complained about swallowing problems due to tonsillitis or pharyngitis, there is a significant difference. According to a study when it comes to pharyngeal disabilities as the cause of swallowing difficulty <10% patients were recognized (26) (Marquis et al., 2013). When health care professionals were questioned about how often they asked from patients about the swallowing difficulty related to solid oral dosage forms there was no significant difference. Similarly, no difference was seen in the responses of doctors and pharmacists regarding patients discussing swallowing difficulty for solid oral dosage form in general and during their routine medication use. Whereas according to one study 37.4% of patients told the general physicians about the swallowing difficulty with their medicines (Schiele et al., 2013) and another investigation reported 9% prevalence (Marquis et al., 2013).

The results also showed that the incidence of dysphagia is high in geriatric population as compared to children. Evidence has also highlighted the greater frequency of dysphagia associated swallowing difficulty in aging population (Stegemann et al., 2012). It was recommended previously that primarily it was the pharmacist's responsibility to perform regular screening of swallowing problems predominantly in the geriatric patients and must provide management and recommendations regarding medicine use in patients. The availability of related information guidelines on safe medication use can also be implemented by pharmacists by creating a multidisciplinary team (Masilamoney and Dowse, 2018). However, studies have also shown that 10 – 40% of "healthy adult population" can encounter swallowing difficulties related to solid oral dosage forms (Forough et al., 2018).

When the doctors and pharmacists were asked about the reasons behind the swallowing issues of medications 39% pharmacist and 45% doctors believes it is due to the large size of the drug. Notenboom et al., reported that approximately 29.6% of the aged population complete the swallowing mission with difficulty attributed to the size of the tablet/capsule (Notenboom et al., 2017) and the too large size of the tablet was the most common reason of swallowing difficulty in patients with dysphagia (Marquis et al., 2013).

The unpleasant taste showed 34% and 35% and psychological issues demonstrated 21% and 20% agreement among the pharmacists and doctors, respectively. Several active pharmaceutical ingredients possess bitter taste and hence are difficult to swallow (Notenboom et al., 2014) especially when the tablets were crushed before administration. A prospective study reported that about 21% of the patients faced swallowing issues because of the bad taste (Marquis et al., 2013). The use of taste masking agents or administering the drug with food or juices was an option to mask the terrible taste (Kelly et al., 2010) where 19% of the older population adapted this practice (Vallet et al., 2018). On the contrary, psychological factors showed the prevalence of <10% in patients as the cause of swallowing difficulty (Marquis et al., 2013).

Only 10% pharmacist and 4% doctors believed that poly pharmacy can contribute to swallowing difficulty. Previous survey reported that in case where a number of medicines were given which impacted swallowing, 59.8% patients thought it was due to single medicine only, 30.4% patients believed it was due to more than one medicine and only 9.8% patients believed that it was due to poly pharmacy (Marquis et al., 2013).

To overcome challenge of dysphagia, suggestions were obtained from the doctors and pharmacists. Only 22% pharmacist and 48% doctors considered that drinking enough water can resolve this problem. Moreover, 34% Pharmacists and 29% doctors suggested crushing the tablet or splitting the capsule shells, 12% and 18% Pharmacists and doctors respectively recommended mixing the drug with food. Variability was seen in recommendations regarding the use of alternate dosage forms as 37% pharmacists and only 9% doctors considered using alternate dosage form. However previous study strongly recommended the use of alternate dosage form like liquid formulation, and this can be implemented by the collaboration of healthcare professionals (Belissa et al., 2019). Evidence also demonstrates where patients themselves asked their physician to prescribe alternate substitute therapy due to ongoing swallowing difficulty (Marquis et al., 2013).

Limitations and Recommendations

Data were gathered once only from renowned hospitals of Karachi and the healthcare professionals' perception and practices regarding swallowing difficulties of drugs among patients may change over time. It is suggested to conduct the study on a mass level in all primary, secondary or tertiary points of care. Based on the results, it is concluded that standard treatment guidelines should be available to curtail issues related to individual prescriptions.

Conclusion

The healthcare professionals have different viewpoint related to medication practice and amendments in therapy in case swallowing issues arise for the patients. Some patients are habitual to amend their medication even when there is no need; also instruction is not taken from healthcare professionals in this respect. Healthcare professionals must be assertive to educate patients about problems in swallowing and medication dosage form amendment.

References

1. Author. [1] Schiele, J. T., Quinzler, R., Klimm, H.-D. et al. Difficulties swallowing solid oral dosage forms in a general practice population: prevalence, causes, and relationship to dosage forms. European journal of clinical pharmacology, 2013, 69: 937-948
2. Bonacucina, G., Logrippo, S., Cespi, M. et al. Chemical and microbiological stability studies of an aqueous solution of pravastatin sodium salt for drug therapy of the dysphagic patients. European Journal of Hospital Pharmacy, 2016, 23: 288-293

3. Lau, E. T., Steadman, K. J., Cichero, J. A. et al. Pharmacist, general practitioner, and nurse perceptions, experiences, and knowledge of medication dosage form modification. Integrated Pharmacy Research and Practice, 2013, 3: 1-9.
4. Quinzler, R., Szecsenyi, J. & Haefeli, W. et al. Tablet splitting: patients and physicians need better support. European journal of clinical pharmacology, 2007, 63: 1203-1204
5. Quinzler, R., Gasse, C., Schneider, A. et al. The frequency of inappropriate tablet splitting in primary care. European journal of clinical pharmacology, 2006, 62: 1065-1073.
6. Lau, E. T., Steadman, K. J., Mak, M. et al. Prevalence of swallowing difficulties and medication modification in customers of community pharmacists. Journal of Pharmacy Practice and Research, 2015, 45: 18-23
7. Wirth, R., Dziewas, R., Beck, A. M. et al. Oropharyngeal dysphagia in older persons–from pathophysiology to adequate intervention: a review and summary of an international expert meeting. Clinical interventions in aging, 2016, 11: 189.
8. Zuliani, G., Galvani, M., Sioulis, F. et al. Discharge diagnosis and comorbidity profile in hospitalized older patients with dementia. International journal of geriatric psychiatry, 2012, 27: 313-320
9. World Gastroenterology Organization, 2014. Dysphagia global guidelines & cascades http:// www.worldgastroenterology.org/UserFiles/file/guidelines/dysphagia-english-2014.pdf
10. Kelly, J., Wright, D. & Wood, J. et al. Medicine administration errors in patients with dysphagia in secondary care: a multi-centre observational study. Journal of advanced nursing, 2011, 67: 2615-2627.
11. Logrippo, S., Ricci, G., Sestili, M. et al. Oral drug therapy in elderly with dysphagia: between a rock and a hard place! Clinical interventions in Aging, 2017, 12: 241.
12. Downey, C. E., Thakerar, A. & Kirsa, S. Don't rush to crush: audit of modification to oral medicines for patients with swallowing difficulties. Journal of Pharmacy Practice and Research, 2015, 45: 146-151
13. Stubbs, J., Haw, C. & Dickens, G. Dose form modification–a common but potentially hazardous practice. A literature review and study of medication administration to older psychiatric inpatients. International psychogeriatrics, 2008, 20: 616-627
14. Habib, W. A., Alanizi, A. S., Abdelhamid, M. M. et al. Accuracy of tablet splitting: Comparison study between hand splitting and tablet cutter. Saudi Pharmaceutical Journal, 2014, 22: 454-459
15. Hommel, K. A. & Baldassano, R. N. Brief report: Barriers to treatment adherence in pediatric inflammatory bowel disease. Journal of pediatric psychology, 2010, 35: 1005-1010
16. Marquis, J., Schneider, M.-P., Payot, V. et al. Swallowing difficulties with oral drugs among polypharmacy patients attending community pharmacies. International journal of clinical pharmacy, 2013, 35: 1130-1136
17. MC Gillicuddy, A., Kelly, M., Crean, A. M. et al. The knowledge, attitudes and beliefs of patients and their healthcare professionals around oral dosage form modification: A systematic review of the qualitative literature. Research in Social and Administrative Pharmacy, 2017, 13: 717-726
18. Raosoft. Sample Size Calculator. http://www.raosoft.com/samplesize.html, Accessed 6 July /wml.txt/980810-2.html, 1998-08-16/1998-10-04.

Table 1: Gender-wise Distribution of Enrolled Health Care Professional (HCP) complements

HCP	GENDER		Total
	MALE	FEMALE	
Pharmacist	38 (36.45%)	66 (63.46%)	104 (100%)
General physician	40 (38.10%)	65 (61.90%)	105 (100%)

Table 2: Response of Pharmacists and General Physicians

S. No	Questions	Pharmacist n=104					General physician n=105					p-value
		Yes n (%)	No n (%)	Sometimes n (%)	Often n (%)	Total n (%)	Yes n (%)	No n (%)	Sometimes n (%)	Often n (%)	Total n (%)	
1	Have you ever asked patients if they had swallowing problem for oral solid dosage form?	60 (57.69)	10 (9.62)	24 (23.07)	10 (9.62)		64 (60.95)	20 (19.05)	12 (11.43)	9 (8.57)		0.040
2	Have patients ever discussed with you about difficulty in swallowing oral solid dosage form?	52 (50)	16 (15.38)	28 (26.92)	9 (8.65)		54 (51.43%)	19 (18.09%)	26 (24.76%)	6 (5.71%)		0.809
3	Have patients ever complained to you about swallowing problems due to tonsillitis or pharyngitis?	43 (41.34)	24 (23.07)	28 (26.92)	9 (8.65)		33 (31.43)	51 (48.57)	14 (13.33)	7 (6.73)		0.001
4	Have the patients ever complained swallowing problem in routine due to use of certain medication?	19 (18.27)	30 (28.84)	49 (47.12)	7 (6.73)		22 (20.95)	35 (33.33)	33 (31.43)	10 (9.62)		0.247
5	Did you ever required to crush tablet or open capsule for administration to patient with swallowing problem?	30 (28.84)	26 (25)	36 (24.61)	13 (12.5)	104 (100)	47 (44.76)	39 (37.14)	15 (14.28)	4 (3.81)	105 (100)	0.000

Table 3: Practices of HCPs regarding Swallowing Difficulties for Different Populations

Response	Factors	Pharmacist	General physician	p-value
Patients from which age group complained about swallowing difficulties?	Children n (%)	22 (21.15)	17 (16.19)	0.001
	Adults n (%)	13 (12.50)	03 (2.86)	0.002
	Geriatrics n (%)	64 (61.54)	77 (73.33)	0.010
	Pregnant n (%)	5 (4.81)	8 (7.62)	0.020
	Total n (%)	**104 (100)**	**105 (100)**	
reason behind swallowing problems of medication in patients	Poly Pharmacy n (%)	09 (8.65)	21 (20.00)	0.002
	Psychological Issues n (%)	21 (20.19)	14 (13.33)	0.001
	Unpleasant Taste n (%)	47 (45.19)	49 (46.67)	0.002
	Larger Size n (%)	27 (25.96)	21 (20.00)	0.031
	Total	**104 (100)**	**105 (100)**	

	n (%)			
you suggest patients if they have swallowing problem of medication	Alternative Dosage Form n (%)	37 (35.58)	09 (8.57)	0.014
	Mix with Food n (%)	12 (11.54)	18 (17.14)	0.016
	Crush Tablet/ Open Capsule Shell n (%)	33 (31.73)	29 (27.62)	0.021
	Take with Plenty of Water n (%)	22 (21.15)	48 (45.71)	0.023
	Total n (%)	**104 (100)**	**105 (100)**	