



Impact of Pharmacists Intervention on Dispensing Practice in the Retail Pharmacies of Kathmandu Metropolitan-Nepal

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Research Article

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Abstract

OBJECTIVE: The objectives of the research with pre-post intervention (one day training) were to evaluate the dispensers knowledge through structured questionnaire, calculate the average dispensing time, assess the content of labelling parameter and evaluate the effectiveness of pharmacist intervention.

METHODS: A base line survey (n=104) with semi-structured questionnaire was done. Twenty pharmacies were randomly chosen for interventional study. Outcome measures consisted of percentage of right answer, observation of dispensing time, percentage of drugs adequately labelled and labelling content.

RESULTS: A pre-post evaluation of answers to self-administered questionnaire showed improvement in knowledge from 70.71% to 91.42%. The average number of retail pharmacies outside the hospital was 5, with more number outside the hospitals which have their own hospital pharmacy. The average dispensing time was 97.26 seconds. Label was present in 94.5% of encounters but only 3.3% had envelop use. 21% increment in average dispensing time was seen in intervention group.

CONCLUSION: Improvement in dispensing practice can occur even with a short training of one day.

Keywords: *dispensing practice, average dispensing time, retail pharmacy, Pharmacist intervention, Nepal*

Introduction

The importance of retail pharmacies in developing countries as a source of advice on pharmaceuticals is widely accepted [1-8]. But the quality of pharmacy services in low and middle income

countries is not satisfactory [2]. With 8800 retail pharmacy national wide, Nepal's retail pharmaceutical sector boasts a chemist shop-customer ratio of 1:3010[10]. But there are numerous retail pharmacies concentrated near the vicinity of hospitals [9]. There are 7 government and 37 NGO/INGO and private sector hospitals in Kathmandu district [10]. There are 1530 retail outlets in Kathmandu District up to Ashad 2068 (July 2012)[8]. Most hospitals do not own hospital pharmacy but give on lease [11]. But the quality of pharmacy service in hospital can be ensured only when hospitals run their own pharmacy [11,12]. Realizing this importance, government of Nepal has recently given directives for the operation of pharmacy services within the hospital [13].

About 90% of drug sales in Nepal occur in the private sector, predominantly through retailer not trained in pharmacy like paramedical staffs [4]. As per Drug act 1978 of Nepal, Pharmacist, Pharmacy assistant and Health professionalist are qualified manpower for opening up a retail Pharmacy and to dispense all the Category of medicine registered in Nepal [14]. The production of health professionalist began in 1981 [15] and stopped in 2005 by the introduction of Diploma in Pharmacy, DPharm course by Centre for Technical Education and Vocational Training, CTEVT in the same year [16, 17], thus replacing former pharmacy manpower.

Dispensing is an important part of the drug use process [18-19]. Average dispensing time, percentage of drugs adequately labelled, patients' knowledge of correct dosage has been widely used for evaluating dispensing practice [3,7,8,20,21].

Different techniques for improving retail pharmacy practitioner's behaviour have been identified. They are- Information alone, persuasion, incentive and coercion [1]. In Nepal, the positive impact of training for retailers has been attained by INRUD [3, 22-24].

The aims of this study were (1) to assess the dispensers' knowledge through the self-administered questionnaire (2) to calculate average dispensing time (3) to assess the quality of label (4)



to evaluate the effectiveness of pharmacist intervention i.e. one day training on dispensers.

Materials and Methods

Study Design

This prospective cross-sectional, observational, interventional study was designed to assess the dispensing knowledge and practice of dispensers. Average dispensing time is used to assess the impact of training.

Study Site

The study site was the retail pharmacies within the vicinity (200 meters) of major hospitals of Kathmandu Metropolitan.

Methodology and data collection

Structured questionnaire [supplementary file] was developed to assess dispenser knowledge. The questionnaire was firstly pilot tested for readability and ease of understanding among 10 dispensers. The study population was dispensers of retail pharmacies. The sample size was determined according to WHO manual's [22] recommendation for cross-sectional comparative studies. 30 encounters were recorded using data collection sheet [supplementary file]. INRUD-Nepal training and its content was taken as reference for preparing questionnaire and conducting training [3]. A letter given by the Kathmandu University, Department of Pharmacy was shown and verbal consent from the pharmacy in-charge and the dispenser was taken.

After observing dispensing, patient was requested for interview and various information needed including the drugs dispensed were noted. Those patients who could not read and write Nepali language were considered as illiterate.

Training

A one day Training took place on Saturday 3rd September 2011. Three pharmacists and one senior marketing person acted as a trainer. Training manual was given to each trainee.

Data Analysis

The results were coded and entered in a computer using SPSS 15. The descriptive frequencies of qualification, gender, age, work duration, right answers, average dispensing time, drugs in prescription and label parameters were calculated. Pearsons correlation and chi square test was carried out for right answer and work duration and average dispensing time and literacy rate respectively. Impact assessment was done by comparing means of average dispensing time and dispensing knowledge by applying t-test.

Results and Findings

20 hospitals were functioning in Kathmandu Metropolitan. There were 104 retail pharmacies within the vicinity of the hospitals which accounts for an average of 5.25 pharmacies per hospital.

Demographics

Dispensers

104 dispensers filled the questionnaire. 80.76% questionnaire fillers were male and 19.23 % were female (n=104).The mean age was 29.1 year (range 18-55) [Table 1]. 91% were interested for the training. The work experience of most dispensers (46.2%) was in the category 1 – 5 years [Table 2].

Table 1: Age distribution (questionnaire survey, n=104)

Age Group	Frequency	Male	Female
10 - 20	5	3	1
20 - 30	53	41	13
30 - 40	37	33	4
40 - 50	6	6	0
50 - 60	3	1	2
Total	104	84	20

Table 2: Work experience of the dispensers

Year category	Frequency	Percent
1 – 5	48	46.2
5 – 10	22	21.2
10 – 15	15	14.4
15 – 20	11	10.6
20 – 25	7	6.7
30 – 35	1	0.96
Total	104	100

Qualification of dispensers

28.84% dispensers had Community Medical Assistant (C.M.A) as the qualification [Table 3].

Table 3: Qualification of respondent dispensers

Qualification	Male	Female	Owner	non-owner	Total	(%)
Orientation	15	2	13	4	17	16.24
CMA	20	5	9	16	25	24.03
BPharm	1	0	0	1	1	0.96
D.Pharm	16	5	8	16	21	20.19
H.A	7	0	5	2	7	6.73
ANM	0	3	2	1	3	2.88
Other than health	11	3	5	9	14	13.46
Orientation and D. Pharm	3	0	1	2	3	2.88
Orientation and C.M.A	2	0	2	0	2	1.92
Orientation and H.A	1	1	1	1	2	1.92
C.M.A and D. Pharm	4	0	4	0	4	3.84
C.M.A and H.A	1	0	1	0	1	0.96
C.M.A and other	2	1	1	2	3	2.88
C.M.A and D. Pharm and other	1	0	1	0	1	0.96
Total	84(80.76%)	20(19.23%)	53(50.96%)	51(49.04%)	104(100%)	100%

Dispensing knowledge

Right answer mean percentage is 66.07%. C.M.A and other qualification secured the highest right answer (mean=10.33). The maximum right answer is 9 and 18 respondents made it [Figure 1].

There is an increase in average right answers in the post test (control: 10.20 to 10.40, Intervention: 9.90



to 12.80) [Figure 2] accounting for increase in dispensing knowledge from 70.71 % to 91.42%. It is not significant (d. f = 9, p <0.05, t = 0.344) in control but it is significant in intervention group (d. f = 9, p <0.05, t = 4.894). Pearsons correlation for right answer and work experience does not show any association (pearsons coefficient: 0.138, n=104) [Table 4].

Figure 1: Right answer for individual dispenser (N=104)

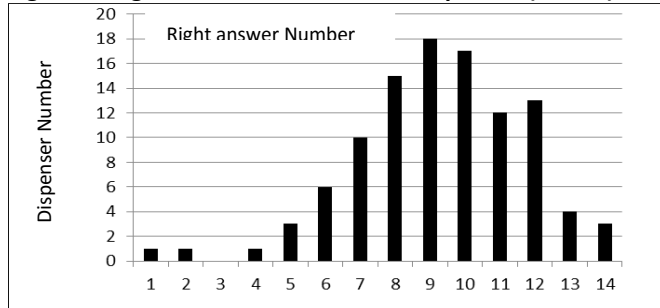


Table 4: Pearson correlation between work experience and right answer

		Work duration	Right answer
Work duration	Pearson correlation	1	.138
	Sig (2-tailed)		.162
	N	104	104
Right answer	Pearson Correlation	.138	1
	Sig. (2-tailed)	.162	
	N	104	104

Average dispensing time

The average dispensing time is 97.26 seconds (Pre-test, Encounter = 600, SD = 63.58) and 108.44 (Post-test, Encounter = 600, SD = 65.42). The increase in average dispensing time in control and intervention group is by 0.95% (95.95 to 96.87 seconds) and 21% (98.58 to 120 seconds) respectively. This increase is not statistically significant (d. f = 10, p < .05, t = 0.270) in control but significant (d. f = 10, p < .05, t = 5.33) in intervention group. Average dispensing time has been summarized in Table 5.

Table 5: Dispensing time category-wise information

Dispensing time Category (in second) (n=600), in each test	Pre-test		Post-test	
	Number of cases	Mean Number of Drugs in prescription	Number of cases	Mean Number of Drugs in prescription
≤25	13	1.38	8	1.13
>25 - ≤50	125	1.43	102	1.39
>50 - ≤75	140	1.72	206	1.79
>75 - ≤100	100	2.34	111	2.30
>100 - ≤125	82	2.45	56	2.50
>125 - ≤150	46	2.48	27	2.78
>150 - ≤175	29	3.21	36	3.08
>175 - ≤200	33	2.97	17	3.65
>200 - ≤225	9	3.33	17	3.18
>225 - ≤250	7	3.86	7	3.57
>250 - ≤275	3	3.33	3	4
>275 - ≤300	6	3.33	3	4.67

Average dispensing time vs education status

By the analysis association between educational status and dispensing time has been observed (Pearson Chi-Square value: 57.708, d. f = 20). The average dispensing time for illiterate and literate is 109.31 (n=294) and 100.74 seconds (n = 906) respectively. This shows that dispensers give more time to illiterate than literate (d. f = 905, p < 0.1, t = - 4.031).

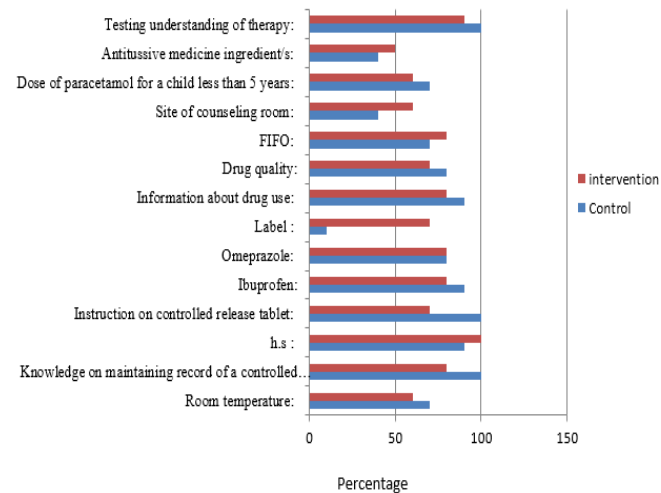
Demographics of patients

53 % of patients were male. Majority of them were in the age group 20 – 30 year. The literate and illiterate percentage is 22.5 % and 77.5 %.

Drug distribution:

Average number of medicine per prescription was 2.08 (n =1200, Range=11). 15% of medicines dispensed were antibiotics, 12.5% analgesics, antipyretic and anti-inflammatory, 11.93% antihypertensive, 10.16% anti-secretory and antacids, vitamin and minerals 7.96%, 4.58% oral hypoglycaemic agents, 3.54% cough and cold medications and other remaining percentage accounting for other groups of medicine. Dosage form distribution is like this- solid dosage form (81.9 %), liquid dosage form (11.73%), ointments and creams (5.15 %) and rotacaps and inhalers (1.19 %).

Figure 2: Correct right answer in control and intervention



Percentage of drugs adequately labelled

92.3 % of the encounters had frequency and information on use written on the strip itself. But envelop use was only in 3.3%. Envelope was available only in 6 pharmacies. None of the label included name of the patient and medicine. The only intervention dispenser used to dispense illiterate patients were by making zero. For example: if a medicine has to be taken in the morning and evening dispenser would write zero, then dash line and again zero.



Discussion

80.76 % of the dispensers were male in this study which is consistent with other study done in Nepal; 88% [23], 88.33% [24], 87% [25] and India 93% [26]. Greater percentage of female involvement in community pharmacy has been observed in turkey 79.2% [6]. The mean age of the respondents obtained in this research is consistent with another research done in Nepal where the mean age was 33 years [21].

Earlier research done in Nepal had more number of orientation holders [16, 24] but CMA involvement is more here which is consistent with the result obtained by gyawali *et. al* [25]. This may be due to the policy change in Nepal which caused the stoppage of orientation training. Dispenser number with health unrelated qualification is declining. A decade ago two third dispenser had such qualification [22], This and another research has respectively 13.46 % and 5% involvement [24]. Recently in Nepal D. Pharm has become minimum course for opening a retail pharmacy. Study in Turkey has also shown the involvement of about 44% pharmacy employees with no more than a primary school degree [6]. Mean work experience of the retail pharmacy dispensers was 11.1 years in Turkey [8] and 2 – 30 years in India [26] while in this research it is 1-5 years.

Dispensing knowledge

An increase in dispensing knowledge by 20.71% was observed which slightly more than similar research in Nepal is done by Kafle *et.al*. Where an increment of 17% and 16% decrease was observed in two different intervention group. But the mean percentage of right answer obtained in this research is quite high compared to INRUD -Nepal study where less than 40% was obtained [3]. Increase in dispensing knowledge due to intervention has been recorded in various researches [3, 21]. 87.74 % of the respondents have correctly answered the questions related to: his meaning, proper time for omeprazole intake, and reason for taking ibuprofen after food and quality parameter of medicine. But only 56.73 % and 34.61% have correctly answered the question related to the constituent of antitussive medicine and the dose of paracetamol on body weight basis respectively.

Average dispensing time and its relationship with other parameter

Average dispensing time in illiterate patient/patient attendant is greater than in literate. 25.83% of encounters (n=1200) had at least one antihypertensive medicine.

In 6.12 % and 4.30% of the cases, communication about the individual drug has been covered in illiterate and literate patients respectively. The average dispensing time in this study is 97.83 seconds. But the research done by Kafle *et.al* had 63.6 seconds in pre and 76.5 seconds in post-test [3]. In a questionnaire based research dispensers reported 1- 5 minutes for dispensing [23]. In Ethiopia there was a difference in average dispensing time in rural and urban areas; 111 and 102 respectively [8]. The average dispensing time in other countries are; Turkey 149 seconds [8] and Ethiopia 111.6

seconds [8]. Cambodian government has set the national standard of average dispensing time as 5 minutes and in one research an average dispensing time was 4 minutes [19].

Average number of drugs per prescription in 330 prescriptions was 2.35 in Cambodia [19]. In Tanzania too, 16% antibiotics, 18% analgesics, 6% cough and cold remedies and 5.3% vitamins were dispensed [6]. As high as 66% antibiotic was recorded in Cambodian study [19].

The criteria for labelling was the inclusion of frequency, when to take and how to take with or without the use of envelope. This may be the reason for getting as high as 94.5% label complete encounters. Similar kind of research in Nepal had no label at all [3]. In a similar research done in Turkey, 10% were unlabelled and 43% adequately labelled [7]. Not a single drug was labelled in a Cambodian research [19].

Conclusion

A significant increase in the average dispensing time and dispensing knowledge after the intervention has shown that even a short training on dispensing practices can have a good impact. Thus the trainings focused on increasing the knowledge and dispensing practice of dispensers is necessary for the benefit of the patients. Planned training of optimum duration at regular interval can have a very profound effect.

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AUTHORS' CONTRIBUTIONS

Authors contributed equally to all aspects of the study.

PEER REVIEW

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests.