

Volume 1 / Number 4 / 2013

ISSN 2303-4092

Balkan Journal of Health Science



design by Almir Rizvanovic

Balkan Journal of Health Science

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Published by DRUNPP, Sarajevo
Volume 1 Number 4, 2013
ISSN 2303-4092

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Management of human resources: significance of motivation strategy implementation in case of health care workers

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Abstract

Problem: Motivation of workers is very important for every working organisation. It is crucial factor in keeping individuals striving forward. Opposite to motivation is stress and depression. Worker may work with lower wages but it is almost impossible make them work without respect, care and support(1). Aim of this study is to evaluate the role of reward strategy in enhancement of motivation for work

Patients and methods: 210 workers were analyzed. 90 ninety of them were physicians, ninety(90) were nurses and thirty were sanitation workers. They were gathered from 3 medical Centers: Clinical Center of Sarajevo, Cantonal hospital Bihać and Cantonal hospital Zenica. Study was conducted from July to November 2011, health workers were from internal medicine and surgical departments. Study was prospective, comparative and descriptive. Questionnaire according to Licker model offered answers on scale from 1-7. Results were collected from above mentioned questionnaire.

Results: Results have shown positive correlation between different analyzed groups as well as significant similarities in attitudes in different Centers. According to opinions gathered from analyzed personnel for enhancement of motivation for professional work performance non material and material strategy is required

Conclusion: Material strategies of motivation are designated as very important for workers and they are existant in all analyzed centers approximately in equal amounts. Non material strategies of motivation are not sufficiently developed in either analyzed Center

Key words: human resources, reward strategies, motivation

Introduction

Motivation is „complex of forces that initiate and keep person working activity in desired direction“ (2). Motivation is common term for all internal factors that unite intellectual and physical energy, factors that initiate and organize individual activities, create direction, intensity and duration (3). Creator of motivation system in organization should be familiar with interests and stimulation forces of workers so that potential implementation of motivation system could be stimulating (4). Increasing number of persons, besides fulfilling basic needs related to survival, want to satisfy needs of higher order-development and confirmation of own capabilities, hierarchy status and acknowledgment.

We make distinction between strategies of material rewarding and nonmaterial motivation strategies (5).

Material strategies are:

- direct financial benefit (salary)
- indirect financial salary (benefits) that promotes material standard

In working organizations we have display of various nonmaterial strategies; work design, management style, sliding working time, acknowledgment and feedback, promotion and career development

Method of study: study analyzed employees in health care centers of secondary and tertiary level that have specific professional role in health care service

Inclusion criteria: physicians (specialist and residents), college graduated and nongraduated nurses and sanitation workers that are employed in internal medicine and surgical wards.

Exclusion criteria: nonfulfillment of above mentioned criteria

Study was conducted on health care workers in three hospitals. Examinees are stratified according to professional level. 1/3 of nurses are nurses with diploma attained from higher medical school or healthcare college. Among examinees we analyzed 8 sanitation workers with completed secondary school. Other sanitation workers had completed only elementary school. Out of total number of examinees 148 were females and 62 were males.

Methods of study: it was comparative, descriptive prospective study. Lickert model was used as questionnaire in this study. Answers to questions were scored from 1-7. Score of one (1) meant denial/ absence, score of 3 depending on situation, 5-good or important and 7 very important or extraordinary good. Study was carried out during period July-November 2011.

Statistical analysis: Quantitative and qualitative analysis was used. Every question is analyzed and represented with table and graph for same profession. Comparative table for different groups was made. For purpose of descriptive analysis median, mode and standard deviation was calculated

Results

Studies have shown that the amount of stress is more distinct for the doctors and nurses, than workers. Profession itself is big enough stress, and if there are inconvenient situations in the work environment, they can lead to psycho-physical fatigue, and can be reflected through the collapse of work motivation. Table 1.

The importance of using material strategies.

Study shows that health and retirement insurance and certainty of employment is rated with the highest level of importance. Also, employees find height of salary, help with the apartment solution, not earning salary for other people, adequately rewarded work, holidays, discouragement of unearned rewarding and team work very important. Every one of listed segments has been rated as important or very important for all professions from all centers in which the research was conducted. Table 2.

Examinees have rated good work organization, good and educated managers, positive work mood, developing professional career, participation of employees in the segment of introducing changes and making decisions, possibility of crea-

Table 1. Degree of motivation with in analyzed group

Your work motivation?	AR.S	Doctors		AR.S.	Nurses		AR.S.	Workers	
		SD	MOD		SD	MOD		SD	MOD
1. Do You feel good while You do Your job?	4,8	1,52	5	5,01	1,52	7	4,3	2	7
2. Do Your co-workers appreciate Your work and contribute?	4,46	1,55	3	4,31	1,82	3	3,9	1,66	3
3. Are You capable of suggesting new ideas?	3,81	1,73	3	3,18	1,9	3	2,13	1,36	3
4. Do others consider Your Work important?	4,45	1,56	5	4,45	1,99	3	3,9	2,23	3
5. Grade the level of Your work motivation?	4,7	1,78	7	4,6	2,1	7	4,4	2,23	7
6. Grade the level of stress in Your work place?	5,96	1,5	7	5,62	1,74	7	3,6	1,12	3

Table 2. Material strategy and its importance

How important is to You...	x	Doctors		x	Nurses		x	Workers	
		SD	MOD		SD	MOD		SD	MOD
1....height of Your salary?	5,35	1,74	7	6,13	1,13	7	6,7	0,78	7
2....certainty of employment?	6,2	1,54	7	6,4	1,23	7	6,7	0,84	7
3....health and retirement Insurance?	6	1,42	7	6,5	1,22	7	6,9	0,72	7
4....vacation, transport and a worm meal?	6,2	1,37	7	6,5	0,98	7	6,4	0,72	7
5....help for an apartment solution?	5,2	2,1	7	5,3	2,18	7	6,4	1,78	7
6... possibility of extra work-extra earning?	5,47	1,92	7	5,23	2,02	7	6	0,84	7
7... that the employees are paid for what they have done?	5,4	1,61	7	5,4	2,27	7	5,5	0,75	7

Table 3. Non-material strategies and their importance

How important is to you?	Ar.s.	Doctors		Ar.s.	Nurses		Ar.s.	Workers	
		SD	MOD		SD	MOD		SD	MOD
1...good organization of work process?	6,4	1,04	7	6,5	1,13	7	6,4	0,92	7
2...that managers have Management skills?	6,3	1,18	7	6,1	1,1	7	6,1	1,35	7
3...that You feel good in Your work place?	6,5	0,93	7	6,5	0,98	7	6,4	1,09	7
4...the presence of work culture and respect?	6,7	0,96	7	6,5	1,11	7	6,4	0,99	7
5...participating in decision making for work processes?	5,7	1,35	7	5,5	1,54	7	5,4	2,1	7
6...the possibility of sugesting creative solutions?	5,8	1,2	7	5,5	1,48	7	4,7	1,97	5
7..to share the success of the organization?	5,8	1,32	7	5,7	1,54	7	5,1	1,86	7
8...to get a reply for Your requests?	6,2	1,22	7	6,2	1,1	7	5,4	1,42	7
8...to have a support for developing Your career?	6,1	1,34	7	5,8	1,24	7	4,8	1,78	5
9...to educate Yourself while working?	6,3	1,15	7	6,2	1,31	7	4,8	1,91	7

tive and innovative development and feedback information as very relevant. Professional uprising, and the possibility of personal development and advancement is highly positioned in the degree of importance

What is more important for the work motivation;

Examinees consider that it is more important:

a) that the employee is well paid 38% answers,

b) that the employee is respected member of a collective with 39% answers,

The rest of examinees (23 %) consider both to be equally important. Third table.

Discussions

What contribution will employees give while performing their assignments depends on how well they feel in their work place.(6) Good work organization, presence of organizational culture, appreciation of good work and devotion, possibility of employees suggesting new creative solutions makes employees motivated for work. Presence of positive work atmosphere largely depends of relations between co-workers and good communication.

High stress level that examinees feel is considered to be caused by bad communication.(7) Disturbing work atmosphere reduces work efficiency, quality of service, as well as personal progress and prosperity. (8)

Contrary, if there is a good work atmosphere, good communication, respect for other people's assignments, well thought out work process,

clearly defined work tasks, work flexibility, dedication, willingness to help and co-operate, work motivation will increase. Improvement of work quality, improvement of task execution, noticing mistakes and correcting them have a goal of better offering health services.(9) Work atmosphere does not only depend on managers, but of all employees. As the height of material incomes is related to basic human needs (personal earning, health insurance), quality fulfilment of these needs is a base for any other superstructure.(10)

Conclusion

1. High level of stress is recorded in professions of health workers, and a lower level of stress in workers.
2. Motivational material strategies are rated as very important for all employees in listed health institutions.
3. Research indicates that developing non-material rewarding strategies is very important for employees.
4. A significant difference is recorded between doctors and nurses in appliance of non-material motivational strategies when it comes to professional progress and specialization, education with work and progress in their career, where this motivational factor is developed for doctors and completely undeveloped for nurses - an unfortunate and demotivating factor that confirms the second work hypothesis.

5. Research indicates that employees with currently applied rewarding strategies don't feel motivated in their work places, and that is a common opinion of all professions, which means that the null hypothesis has been rejected.

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Investigation of pathogenic Kor River bacteria in different seasons in dehydration conditions

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Abstract

Kor River is one of the most important waterways of Fars province in point view of economics and agriculture. Due to water intake from this river for agriculture, domestic uses, industry, and environmental aspects bacteriology of its along its route is very important. In this study pathogenic bacteriology of the river was conducted and the results were statistically analyzed. The research started Bahman 1385 (February, 2006) for one year. Fecal and coliform bacteria were determined at the outfall of the point sources pollution. Fecal bacteria after Petrochemical complex plant, Sivand and Kor rivers connection and Band-e Amir were also determined. The results showed 8.7%, 8.1% and 6.8% for the mentioned points, respectively. For other outfalls fecal bacteria were 5.6% and 6.2%. Proteus bacteria were only detected exactly after Petrochemical complex plant. Coliform bacteria were determined at the Sivand connection and Band-e Amir which were 6.7% and 5.6% respectively. Salmonella bacteria were determined at the sampling site before and after Petrochemical complex plant, before Sivand and Kor junction, Ban-e Amir, Jounety Bridge, and Faize Abad Band. The results showed that these intestinal pathogenic bacteria are distributed in the Kor river route due to industries and domestic wastewaters.

Key words: Kor River, Fars Province, Biological pollution, fecal coliform, Iran

Introduction

Due to the important in the human life the contamination of it could cause catastrophic problems in the communities (1). These diseases are caused by pathogenic bacteria, viruses, protozoa, and worms (2, 3). The water bodies such as rivers, open channels and dam sites especially in drought

situations are the sites for distribution of these illnesses pathogens and vectors; also these open water bodies are the habitats for different pathogens such as snails, fish, aquatic plants, and vectors like mosquitoes and other insects. These microbes could cause in the human beings different catastrophic epidemic illnesses such as typhoid fever, dysenteries, Para typhoid, Vibrio, and also poliomyelitis in infants (4, 5, and 6).

Kor River is originated from northern part of Fars province by connections of tributaries with different sizes in the mountains of the area and then winds through the region with 285 km and reaches the east south of the basin to Bakhtegan Lake (Figure 1). In the places the domestic wastewater of the rural area are connected to the river. Marvdasht city was water which is designed for more than 100,000 capita for nonpoint source pollution from rice, wheat corn and sugar beat agricultural farms also connected to the river and cause more contamination of it. The discharge from industrial sites such as meat processing Co., Chemical Fertilizer plant, Petrochemical plant, Leather Co., Sugar Co., Flour and Biscuit Can production Co, are all together as much as 56 m³/d, and contribute BOD's load of the Kor River. These industrial are equal to 80000 capita BOD load (1). There fine, protection of this water body is important for sustainable/agriculture are objectives of this study were determination of the pathogenic Bacteria of the Kor River and the occurrence of them in the river water on volume basis. (MPN) based on statistical analysis of the data.

Material and Methods

Crab water sample were taken from ten stations along the Kor River (Table 1). The water samples were taken from water surface, half of the depth and near the bottom in 3 replicates for one year (1, 11, 85 to 1, 11, 86) monthly. The distance between

the stations is not equal and the sites were chosen according to the pollution loads. The samples were same in sterile flask of 125 ml and 4C coliform determination were according to standard methods of Bacteriological Manuals.

Table 1. Characteristics of sampling stations

Station	Station name
1	Doroodzan dam
2	Joonaki bridge
3	Koohsabz-Sfadran road
4	After drain entrance
5	Before Petrochemical Plant
6	After petrochemical Plant
7	Old Khan bridge
8	New Khan bridge
9	Band-e-Amir
10	Band-e-Faiz Abad

Results and Discussions

FC, seasonal variation at different stations and depths

FC bacteria during the cause of study were determined; the results are shown in Figure 2. as Figure 1 shows during spring and summer the FC bacteria were more than the other parts of the year. The percentages of their presence were 32.71, 29.91, 16.62 and 20.56 for spring through winter respectively. Table 2 shows presence of FC bacteria at different stations. As the data of the data shows at all stations the water of the Kor River is contaminated by these bacteria.

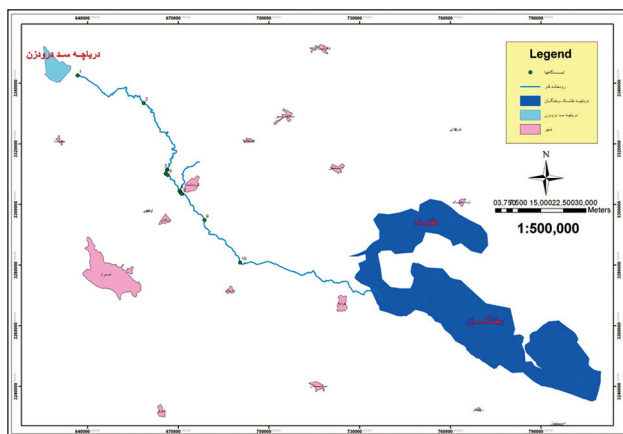


Figure 1. Situation of the Kor River and its route in the Fars Province

The FC bacteria did not have significant difference in different depths of the water depths. The

presence of these bacteria was 32.30, 34.8 and 32.9 percent respectively in the surface, middle and deep parts of the Kor River. Therefore the sampling of water for determination of the FC bacteria could be any convenient depth of the water. This result will help us in saving time and experiences.

B. Coliform bacteria in different seasons, stations and sampling water depths

All the water samples in different seasons were investigated. Increase in coliform bacteria was observed in warmer seasons than the other seasons. The presence of bacteria was 38.9, 31.5, 9.3 and 20.4, for spring, summer, fall and winter, respectively. In different stations also the presence of coliform bacteria was determined. All the stations under investigation showed the presence of these bacteria. But the highest levels alone in stations 8, 9, 5 and 6 respectively. Table 2 shows the results of the presence of the coliform, frequency and the percentage of them. The occurrences of bacteria in surface, middle and deep part of the river water profile were not statistically significant. In other words the depths of the water do not have any effect on the presence of the bacteria.

C. Comparisons of the fecal coliform and other coliform bacteria in different seasons

Figure 2 shows the percentage of two bacteria in all water samples. Both types of bacteria have shown more appearance in spring and summer than fall and winter. Because the water and ambient temperatures were higher than fall and winter therefore, the environmental conditions were suitable for proper growth of these bacteria under study.

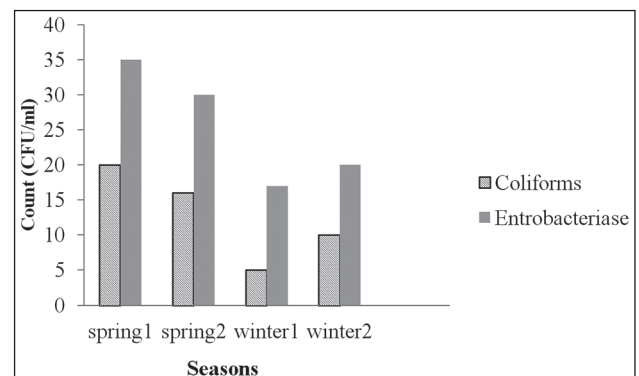


Figure 2. Comparison between count of fecal coliform and coliform bacteria at different seasons

Conclusion

In this study it was shown that in considering that the Kor River receives different domestic wastewater and sewage industrial plants' effluents it is anticipated that the river is contaminated by fecal bacteria, coliform bacteria and most importantly with pathogenic organisms. This will make the problem of infection bacterial diseases in people and create, especially in warm seasons to be more attention. Also, the importance of this research to relevant authorities in controlling water quality and pathogenic contamination of this river has been the place that has the most reviews.

Table 2. Percent of coliform bacteria in various stations

Station	Frequency	Percent
Doroodzan dam	2	3.7
Joonaki bridge	5	9.3
Koohsabz-Sfadran road	4	7.4
After drain Entrance	4	7.4
Before Petrochemical Plant	6	11.1
After Petrochemical Plant	6	11.1
Old Khan bridge	4	7.4
New Khan bridge	10	18.5
Band-e-Amir	10	16.7
Band-e-Faiz Abad	4	7.4
Total	54	100

Table 3. Comparison between Percent of Coliform and fecal bacteria in various depths

Sampling Location		Bacteria		Total
		Col. [†]	Ent. Bact. [‡]	
Surface	number	18	24	52
	percent	11.2	21.1	32.3
Mid	number	16	40	56
	percent	9.9	24.8	34.7
Bottom	number	20	32	53
	percent	12.4	20.5	32.9
Total	number	54	107	161
	percent	33.5	66.5	100

[†]= coliform and [‡]= entrobacterise

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Psychological impact on drug spending among the population in municipality Berane

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Abstract

Objective: This pharmacoepidemiological study analyzed the drug consumption in a year period of time in a community pharmacy in Berane town, Montenegro, and identified drug groups that constitute the greatest financial cost.

Method: Drug consumption was monitored in the public pharmacy in Berane for one year period of time, and was expressed as a number of defined daily doses (DDD) used in 1000 inhabitants. For drug consumption calculation of drug groups the method based on Anatomical Therapeutic Chemical Classification (ATC) system was used.

Results: During observed period, consumption of medicines in public pharmacy in Berane was 364.47 DDD/1000 inhabitants. Metamizole sodium (66.59 DDD/1000 inhabitants), propyphenazone (60.68 DDD/1000 inhabitants) and diclofenac (32.75 DDD/1000 inhabitants) have the largest utilization among all medicines observed. Most of finances during the year were spent on dispensing of amoxicillin (31,358.02 Euros), cefixime (29,943.78 Euros) and human insulin (22,498.64 Euro). ATC groups which had the highest drug consumption were groups N and C.

Conclusion: Drug consumption in analyzed community pharmacy was relatively high because every person, every day, was dispensed with almost 4 DDD. Consumption of drugs is probably much higher than calculated because of exclusion of drug utilization analysis in a dozen of private retail pharmacies in a hospital setting.

Key words: pharmacoepidemiology; drug utilization; community pharmacy services; empirical research; Montenegro.

Introduction

Studies that analyze the consumption of drugs are increasingly common in the literature, and provide a lot of useful information about how the health status of the population and on economic power of the health system. The collected information can be further used for rational drug prescribing and effective treatment of patients. The money is all in which the state allocates for drugs was a large part of total health care costs, and the amount of funds depends on the degree of development of the country.

Usually carried out studies are on the consumption of antibiotics for infections and problems of resistance to micro-organisms with different antibiotics.^{2, 3} However, due to the introduction of new drugs-, as well as changes in treatment, protocols is necessary to monitor the volume of continuing prescribing drugs and material costs for their procurement.⁴

Since there is little data of drug consumption in Montenegro pharmacoepidemiologic any studies on this topic is useful. Especially when you take into account the socio-economic transition of the countries in the region, and that dictates a limited budget that is allocated for this purpose. The aim of this study is to calculate the total consumption of drugs in the pharmacy in a state pharmacy in Berane in one year, what is the psychological impact on the consumption of drugs.

Materials and methods

The use of drugs is followed by a time period of 12 months (in 2008/2009.) in the state pharmacy in Berane Montefarm Pharmacy "Hippocrates" and issued by the listing of drugs. The municipality has 38,900 inhabitants Berane, and the city has 23,600 inhabitants Berane and 6000 refugees.

For each drug it is individually calculated total energy (in mg, g, or IU, depending on the specific drug) for the year. This number is divided by Definitional daily dose (DDD) for each drug, so that obtained value of defined daily doses consumed over a period of one year for each drug. When calculating the consumption of drugs classification

drug costs is done by Anatomical Therapeutic Chemical Classification (ATC). DDD values for individual drugs, as well as the classification itself, as defined by the Collaborating Center for drug statistics methodology WHO- Oslo.5 Updates ATC codes and DDD dose (due to possible periodic changes) as required by the data carried on the official men-

Table 1. Ten with the highest consumption of drugs in the state chemist in Berane over a year. Consumption of drugs was expressed as the number of inhabitants DDD/1000.

Name of the drug	ATC classification	DDD
Metamizol-sodium	N02BB02	66,59
Propyphenazone	N02BB74	60,68
Diclofenac	M01AB05	32,75
Indapamide	C03BA11	28,01
Paracetamol	N02BE01	17,43
Gliklazide	A10BB09	14,29
Lorazepam	N05BA06	13,89
Protein ferrous succinate	B03AE10	10,25
Amoxiciline	J01CA04	10,0
Lisinopril	C09AA03	8,96
Total		262,85

Table 2. Ten drugs to which they supply most of the money spent in the pharmacy Berane

Name of the drug	ATC classification	DDD
Amoxiciline	J01CA04	31358,02 Eur
Cefixime	J01DD08	29943,78 Eur
Human insuline	A10AD01	22498,64 Eur
Lizinopril	C09BA03	15256,89 Eur
Valproid acid	N03AG01	14454,61 Eur
Diclofenac	M01AB05	12694,08 Eur
Aspirine	N02BA01	10836,96 Eur
Ibandronat	M05BA06	10153,71 Eur
Fentanyl	N02AB03	8458,84 Eur
Ibuprofen	M01AE01	7930,38 Eur
Total		163585,9 Eur

Table 3. Consumption of drugs by ATC groups in Berane

ATC drug groups	DDD
A- Drugs for treatment of digestive tract and metabolism	27.99
B-Drugs for treatment of disorders of blood and blood-forming organs	19.02
C- Drugs for the treatment of cardiovascular system	62.87
D- Dermatological drugs	0.37
G- Drugs for treatment of genitor-urinary system and sex hormones	2.42
H- Hormones for systemic use-excluding sex hormones	7.26
J- Anti-infective drugs for systematic use	19.33
L- Cytostatics and immunodulators	0.18
M- Drugs for musculo-skeletal system	51.89
N- Drugs that act on nervous system	170.22
P- Drugs against parasites	-
R- Drugs for treatment of respiratory diseases	2.39
S- Drugs for the diseases of the eye and ear	0.53
V- Other drugs	-
TOTAL	364.47

tioned website Centre(<http://www.whocc.no>). For statistical analysis, the descriptive-analytical method and a retrospective analysis of the data.6

Results

Ten with the highest consumption of drugs in the DDD state pharmacy Berane during the one-year period are presented in the Table 1 Among them throughout the period dominated by metamizol-sodium, propiphenazon and diclofenac.

Table 2 shows the ten drugs for which procurement is the most money spent.

Table 3 shows the consumption of drugs by ATC groups in the state pharmacy in Berane during the period (consumption is shown in DDD/1000 population).

Consumption of certain drugs from certain therapeutic groups during the period. Table 4 shows Consumption in DDD/1000 population.

Table 4. Consumption of certain drugs from certain groups in the state pharmacy Berane in one-year period

The name of the drug	DDD
1. Antacids, ranitadin	8,15
2. Antidiabetic	
Insulin	3,69
Gliclazide	14,29
Glibenvlamide	0,06
3. Vitamins	
Pantotenol	0,45
4. Antikoagulants	
Warfarin	0,13
Acetilsalic acid	7,94
5. Antihemoragics	
Etamsilat	0,06
6. Antianemics	
Ferric sulfate	0,64
Protein ferrous succinate	10,25
7. Drugs for the treatment of heart disease	
Pentaeritritiltetranitrate	7,7
Molsidomin	0,07
8. Antihypertensives	
Doxazosin	1,13
9. Diuretics	
Indapamide	28,01
Furosemide	0,72
Amyloid, Metikotiazid	2,20
10. Beta-adrenergici blokera	
Propranolol	0,02

Atenolol	1,4
Carvedilol	0,61
11. Calcium channel brokers	
Amlodipine	6,67
Nisoldipine	0,02
12. ACE inhibitors	
Lisinopril	8,96
Ramipril	1,26
13. Corticosteroids for the systemic preparation	
Dexamethasone	0,1
Kortizolon sodium succionate	0,07
14. Disease therapy thyroid	
Propylthiouracil	0,43
Tiamazol	6,40
15. Antibiotics for systematic use	
Doxycycline	0,4
Tetracycline	0,05
Ampicillin	0,39
Amoksicillin	10,0
Amoksicilin,clavulanic acid.	4,71
Cefixime	1,46
Sulfamethoxazole-trimethoprim	0,0005
Erythromycin	2,18
Norfloxacin	0,09
Metronidazole	0,05
16. Antiinflammatory and antirheumatic drugs	
Diclofenac	36,64
Ibuprofen	9,06
Naproxen	5,95
17. Analgesics	
Tramadol	0,04
Acetisal acid	1,20
Metamizol	66,59
Popifenazon	60,68
Paracetamol	17,43
18. Psycholeptics	
Diazepam	3,01
Chlordiazepoxide	0,04
Lorazepam	13,89
Bromazepam	1,5
19. Psihoanaleptics	
Amitriptilin	0,005
Paroxetin	0,6
Mitrazepin	0,017
Vinpocetin	4,08
20. Antiasthmatics	
Budesonide	0,19
Aminophylline	1,53
21. Antihistamines for systemic use	
Dimenhydrinate	0,025
Tietilperazin	0,06

Abbreviations

ATC Anatomical Therapeutic Chemical Classification / Anatomical therapeutic chemical classification

DDD defined daily dose / Defined Daily Dose
BD-day hospital / day Bed

DDD/100BD-defined daily dose per 100 bed days / Defined daily doses per 100 bed days

HC / MC-Medical Center / Medical Center

Discussion

Ten with the highest consumption of drugs in the one-year period in the state pharmacy in Berane are shown in Table 1. It can be seen that the highest consumption of metamizol sodium (66.59 DDD/1000 population), propiphenazon (60.68 DDD/1000 population) and diclofenac (32.75 DDD/1000 population). From the table we see that in the first ten drugs is by spending 4 drugs from ATC group N.

Table 2 shows that the most tangible assets during the year was spent on the purchase amoxicillin (31358.02 EUR), which accounts for almost 20% of the total funds spent on the ten best-selling drugs (163,585.9 Euros).

As for consumption by ATC groups (Table 3), we see that drugs that act on the nervous system, group N, represent almost 50% of total consumption (170.22 DDD/1000 population). After these drugs come from Group C (62.87 DDD/1000 population) and M (51.89 DDD/1000 population). The data indicate that each patient receives each day from a group of medicines 1.7 N and 0.6 drugs from group C and 0.5 drugs from the group of M.

Total consumption of drugs in the state pharmacy in Berane is relatively high at 364.47 DDD/1000 population, because each patient is taking medication at the same time raised almost 4 different drugs. There is little data on the use of drugs in Montenegro, which were published in the journals available to a wider scientific and professional community. Some studies related to management of drug policies 7, 8 and others are from the period of common state. 9, 10

Consumption of drugs is certainly much higher than calculated because of a dozen private pharmacies that are not included in this analysis, and also in this study does not include consumption of drugs used in hospital conditions. There is no do-

ubt that the psychological impact on the consumption of drugs is very large, especially for countries undergoing transition, as it is shown by this study.

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The effects of the public use of nursing shawls on breastfeeding in Turkey

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Abstract

Purpose: The aim of this study is to evaluate the effects of the use of nursing shawls on breastfeeding outside the home.

Design: The sample population of this quasi-experimental control group study consisted of 62 lactating mothers whose infants were two months old at the time of sampling. Both the experimental group and the control group consisted of 31 subjects each. Data were collected through a survey questionnaire developed by the investigators after reviewing the literature. Following the collection of the pre-test data, nursing shawls were distributed to the mothers in the experimental group with the aim of facilitating convenient breastfeeding outside the home. Post-test data were collected one month later by telephoning the mothers in both groups.

Findings: While 72.4% of the experimental group reported having nursed their infants outside, 82.1% of the control group reported not having done so. A statistically significant difference was found between the groups ($p < 0.001$). It was determined that 67.7% of the experimental group used the nursing shawls that were distributed following the pre-test.

Results: We found a significant increase in breastfeeding in environments outside the home.

Practice Implications: All mothers who used the nursing shawl reported that they found it useful when breastfeeding.

Key words: Breastfeeding, shawl, mother, baby, culture, nurses

1. Introduction and aims

Breastfeeding is one of the most important factors contributing to the healthy development of infants. Breast milk is unique as it is the best source of all essential nutrients needed during the first six months of life (Gökçay and Gariboğlu, 2002; Çavuşoğlu, 2008; Taşkın, 2005). It is well known

that breastfeeding benefits both mothers and infants in many ways. According to the 2008 Turkey Demographic and Health Survey (TNSA) 69% of infants younger than 2 months, 42% of 2-3 month-olds, 24% of 4-5 month-olds and 2% of 6-7 month-olds were fed breast-milk exclusively (TNSA, 2008). This indicates that a large proportion of infants in Turkey are fed breast-milk, but that the proportion of infants exclusively breastfed during the first 6 months is lower (Taşkın, 2005; TNSA, 2008). There are many factors influencing breastfeeding duration, particularly with regards to exclusive breastfeeding (Bodur et al., 2002; Johnson & Esposito, 2007; Thulier & Mercer, 2009). Breastfeeding is significantly influenced by the cultural attributes of a society (Bodur et al., 2002; Tylor, EB. 2003; Johnson & Esposito, 2007; Thulier & Mercer, 2008). Since breastfeeding is a cultural health behavior, the identification and assessment of cultural determinants that influence breastfeeding practices would be a significant step in ensuring better lactation performance. (Mojab, 2000; Demirtaş, 2005).

Today, many mothers wish to retain their active social-lives while breastfeeding their infants. However, when nursing in crowded settings, they can experience some problems that stem from their attire and their surrounds as well as from cultural influences (Ünal 2009).

The results of a Turkish study show that mothers experience difficulties breastfeeding in crowded environments and outside of their homes (Demirtaş 2005).

In general, mothers prefer to wear comfortable clothes while breastfeeding. In some developed countries, specially designed clothing for lactating mothers can be purchased. Following a Turkish study on this subject, it was determined that breastfeeding mothers do not have sufficient information regarding clothing options for the lactation period (Ünal 2009). The purpose of producing clothing

designed for the breastfeeding period is to ensure comfortable nursing of infants in any setting. It is necessary for the clothing to facilitate breastfeeding, particularly in crowded environments. The nursing shawl is one such item of clothing and is often preferred because it is portable and simple to use. Thus, mothers can breastfeed their infants comfortably in many settings without unnecessary removal of clothing (Ünal 2009).

Purpose of the Study

A review of the literature showed no other studies conducted on this subject. The aim of this study is to evaluate the effects on breastfeeding of the use of nursing shawls in environments outside the home.

Materials and methods

Study Design

This quasi-experimental case-control study was conducted between 1 April 2009 and 1 August 2009 in Yenişehir and Abdurrahmangazi Family Health Centers of Erzurum, Turkey. Written informed consent to conduct the study in the above-mentioned institutions was obtained before the onset of the study.

Study Sample

The study population consisted of lactating mothers whose infants were two months old at the time of recruitment. The sample group consisted of 70 mothers who matched the selection criteria, who were registered at the above-mentioned family health clinics, who had brought their infants in for their month 2 vaccinations and who were selected via non-randomized sampling. Five mothers, 3 from the experimental group and 2 from the control group, were excluded from the study as we were unable to collect post-test data from them. The study sample consisted of 62 mothers, 31 cases and 31 controls. Power analysis revealed that the sample had 99% power of representing the population with 95% confidence and .05 statistical significance.

Procedure and Measures

The survey questionnaires were completed and data were collected after informed consent was obtained from the participants. Mothers who

brought their two month old infants to the family health care centers on odd-numbered days of the month were included in the experimental group while those who brought their babies in on even-numbered days were assigned to the control group. During the first interview (when the infants were at two months) survey questionnaires containing 13 questions on socio-demographic information and out-of-home nursing practices of mothers in both groups were administered. The mothers in the experimental group were provided with nursing shawls and with training that emphasizes the importance of the continuation of breastfeeding, the method of using the shawl and the shawl's benefits to both mothers and infants. This interview with the experimental group subjects took 20 minutes. There was no intervention applied to the control group following pre-test data collection. The telephone numbers of all subjects in both groups were collected. Post-test data were obtained one month later when the infants became 3 months old. The post-test instrument consisted of 9 questions.

The dependent variable of the study was: Mothers breastfeeding their infants outside of the home environment.

The independent variables were: Mothers going out of the home with their infants; the amount of time they remained out of the home environment.

The control variables of the study were: Mothers' age, maternal and paternal education levels, mothers' employment status, occupations of the fathers and the number of children in the families.

Training given to mothers in the experimental group:

The mothers in the experimental group were distributed nursing shawls and were provided with training that emphasizes the importance of the continuation of breastfeeding, the method of using the shawl and the purpose behind it. This interview with the experimental group subjects took 20 minutes.

Method of using the nursing shawl: The nursing shawl which was designed to facilitate ease of breastfeeding outside the home or in crowded settings is used by adjusting the neck-strap and slipping it over the neck.

Functions of the nursing shawl:

- The nursing shawl protects privacy.
- It ensures stress-free breastfeeding outside the home or in crowded settings.

- It calms the infants and allows them to focus on nursing.
- In contrast to blankets, its thin fabric (100% cotton) prevents overheating of the child. It allows mothers to see exactly what their infants are doing.
- It is easily folded and does not take up excessive space in a bag.

Benefits of the nursing shawl to infants:

- Infants can be fed on demand wherever they are.
- They would not have to be bottle-fed.
- They would not have to remain in the dark and become fearful while nursing.
- The shawl allows infants to be more emotionally relaxed and to breathe with more ease as they can see their mothers during breastfeeding.
- While their mothers are socializing, infants can sense and enjoy their mothers' happiness.
- Infants can remain calm and nurse effectively.

Benefits of the nursing shawl to mothers:

- Mothers can breastfeed their infants whenever and wherever they wish.
- They can maintain eye-contact with their infants while nursing them.
- They maintain control of their infants while nursing.
- They are not deprived of social activities due to breastfeeding.
- The shawl creates a comfortable setting for the infants to be fed calmly.
- It offers independence to lactating mothers.

Statistical Analysis

Data analysis was done by using SPSS 10.0 statistical package program by SPSS Inc., Chicago, Illinois, USA. Data was assessed by descriptive analysis and chi-square testing.

Results

Table 1 shows the demographic traits of the mothers in the experimental group and the control group. There were no statistically significant differences between the groups in relation to the mothers' or fathers' level of education or occupational status or the number of children in each family ($p>0.05$).

The mean age of the study subjects was 28.90 ± 4.54 ; 32% had graduated elementary school, 66.1% were home-makers and 40.3% had 2 children. Distribution of the educational status of the fathers showed that 53.2% were high school graduates and 30.6% were teachers.

Table 2 shows the tendency of the mothers to go out with their infants. The pre-test data show that 74.2% of the experimental group and 41.9% of the control group took their infants with them when they went out. The post-test data show that most of the mothers in both the experimental group and the control group went out with their infants.

Table 3 reflects the amount of time mothers spend outside the home with their infants. The pre-test results show that 82.6% of the experimental group stayed out with their infants for 2 hours or longer while 53.8% of the control group stayed out for less than 1 hour. The post-test results indicate that 79.3% of the experimental group and 35.7% of the control group stayed out for over 3 hours.

After assessing the pre-test breastfeeding practices of the mothers outside the home we found that 87% of the mothers in the experimental group and none in the control group breastfed their infants outside the home (Table 4).

The post-test results indicate that 72.4% of the experimental group and 82.1% of the control group reported not breastfeeding outside home environments (Table 4) and the difference was found to be statistically significant ($p<0.001$).

The nursing practices of mothers who take their infants out of the home setting and do not breastfeed were investigated and it was found that bottle-feeding, stored breast-milk, using pacifiers to calm the infant and using infant formula were among the commonly employed alternatives to breastfeeding.

The mothers who took their babies out of the home but did not breastfeed while out, were asked why they refrained from doing so. It was determined that 39.4% thought there was no need, 30.3% were embarrassed to do so, 12.1% were prohibited by their husbands to do so and that 18.2% could not find suitable setting for breastfeeding. No significant differences were found in the post-test data which showed that 35.5% thought there was no need, 19.4% were embarrassed to do so, 16.1% were prohibited by their husbands to do so and that 29% could not find suitable setting for breastfeeding.

Table 1. Comparison of Demographic Traits of the Groups

	Control Group		Experimental Group		Total	
	n	%	n	%	n	%
Mothers' Education Levels						
Elementary School	12	38.7	8	25.8	20	32.3
High School	10	32.3	14	45.2	24	38.7
Tertiary Education	9	29.0	9	29.0	18	29.0
Significance			$x^2=1.467$		$p=0.480$	
Fathers Education Levels						
Elementary School	2	6.5	2	6.5	4	6.5
High School	15	48.4	18	58.1	33	53.2
Tertiary Education	14	45.2	11	35.5	25	40.3
Significance			$x^2=0.633$		$p=0.729$	
Mothers' Employment Status						
Works	10	32.3	11	35.5	21	33.9
Does not Work	21	67.7	20	64.5	41	66.1
Significance			$x^2=0.788$		$p=0.788$	
Fathers' Occupations						
Clerical Work	8	25.8	6	19.4	14	22.6
Teacher	10	32.3	9	29.0	19	30.6
Laborer	6	19.4	7	22.6	13	21.0
Self-Employed	7	22.6	9	29.9	16	25.8
Significance			$x^2=0.665$		$p=0.881$	
Number of Children						
1 child	9	29.0	5	16.1	14	22.6
2 children	9	29.0	16	51.6	25	40.3
3 children and over	13	41.9	25	32.3	23	37.1
Total	31	100.0	31	100.0	62	100.0
Significance			$x^2=3.494$		$p=0.174$	

Table 2. Tendency of Mothers to Go Out of the Home With Their Infants

	Pre-test				Post-test			
	Experimental Group		Control Group		Experimental Group		Control Group	
	n	%	n	%	n	%	n	%
Goes Out	23	74.2	13	41.9	28	90.3	29	93.5
Does Not Go Out	8	25.8	18	58.1	3	9.7	2	6.5
Total	31	100.0	31	100.0	31	100.0	31	100.0

Table 3. Number of Hours Mothers Spend Out of the Home With Their Infants

Hours	Pre-test				Post-test			
	Experimental Group		Control Group		Experimental Group		Control Group	
	n	%	n	%	n	%	n	%
Less than 1 hour	4	17.4	7	53.8	-	-	-	-
2 hours	19	82.6	6	46.2	6	20.7	18	64.3
3 hours or longer	-	-	-	-	23	79.3	10	35.7
Total	19	100.0	13	100.0	29	100.0	28	100.0

Table 4. Breastfeeding Outside the Home

	PRE-TEST				POST-TEST			
	Experimental Group		Control Group		Experimental Group		Control Group	
	n	%	n	%	n	%	n	%
Breastfeeds	3	13.0	-		21	72.4	5	17.9
Does not Breastfeed	20	87.0	13	100.0	8	27.6	23	82.1
Total	23	100.0	13	100.0	29	100.0	28	100.0
Significance	$\chi^2=1.850$ p= 0.174				$\chi^2=17.092$ p= 0.000			

It was found that 67.7% of the experimental group did use the nursing shawls provided after pre-test data collection and that 32.3% did not. All mothers who used the nursing shawl reported that they found it useful when breastfeeding.

Discussion

In this study exploring the effects of the use of nursing shawls designed to facilitate ease of nursing outside the home on breastfeeding; no statistically significant differences were found between the demographic traits of the experimental group and the control group. The structure and cultural characteristics of society and mothers' socio-cultural background influences mothers' attitudes and behavior toward breastfeeding (Demirtaş 2005). Customs and religious beliefs and attitudes within Turkish society create a dilemma for nursing mothers with regards to breastfeeding in crowded settings. Dependent of their cultural background, some mothers who are aware of the importance of feeding their infants naturally might spend their lactation period at home. In a study by Ünal (2000), it was reported that mothers deprive themselves of social activities in order to breastfeed their infants and refrain from breastfeeding in crowded settings.

It was determined that the post-test percentage of women who go outside the home with their infants was higher. This may be attributable to the fact that the infants were 2 months old at pre-test and 3 months old at post-test and that the decisions of the mothers might be influenced by the developmental stage of the infants.

Time spent outside the home was investigated as it relates to infants' feeding needs. At the onset of the study all mothers reported spending less than 2 hours outside the home with their infants. This may be due

to the infants' nursing needs. Results of the post-test assessment indicate that 79.3% of the experimental group who do take their infants out reported spending more than 3 hours outside the home.

The literature shows that it is more appropriate to adjust feeding frequency not according to schedules, but according to the infant's demands. The fact that an infant is crying is not the first indication that it is hungry. Behaviour such as making sucking motions, placing of the hand to the mouth and stretching out of the limbs are indications that the infant is ready to be nursed. During the first three to 4 months, infants should be fed on cue. Frequency of feeding can be 8-12 times per day or more. The interval between feedings is calculated as once every two to three hours. Feeding on demand is considered to be the most appropriate method for the emotional and digestive health of the infant. In addition, frequent breastfeeding is important as it increases milk production (Gür, 2007; Osborn et al., 2007).

Analyses of pre-test/post-test data show that while almost all mothers who took their infants out refrained from breastfeeding during this period, at the conclusion of the study, most mothers in the experimental group reported nursing their babies outside. It was determined that this is change was associated with the provision of nursing shawls and the accompanying training which emphasized the importance of the continuation of breastfeeding following the collection of the pre-test data.

Feeding expressed breast-milk by bottle, using pacifiers to calm the infant and using infant formula were among the alternatives to breastfeeding used by mothers who take their infants out of the home setting when the infants cried due to hunger.

The majority of mothers who took their infants out reported that they refrained from feeding on demand because the infants were not really hun-

gry, followed respectively by those who reported being embarrassed to do so, being prohibited by their husbands to do so and those who said they could not find suitable setting for breastfeeding. These findings are consistent with the results of a study by Demirtaş (2005) which emphasizes the influence of cultural values on the nursing practices of mothers outside the home.

It was found that most mothers did use the nursing shawls provided and that all mothers who used the shawl reported that they found it useful.

It is evident that social values regarding the importance of breastfeeding do influence the nursing practices of mothers. It is therefore important to encourage mothers to breastfeed their infants wherever and whenever necessary and without limiting their social lives, regardless of societal rules. The nursing shawl can be recommended to mothers as a practical tool which creates the appropriate setting and environment for breastfeeding wherever and whenever necessary. This would prevent mothers from experiencing anxiety due to the interruptions to their social lives and more importantly, allow infants their most natural right to a continued breastfeeding phase.

Conclusion

The results of this study indicate that lactating mothers are in need of support regarding their out-of-home nursing practices and that the nursing shawl significantly increases the rates of breastfeeding outside the home. The nursing shawl can therefore be recommended to nursing mothers as a useful tool for facilitating breastfeeding comfort in social situations.

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Breastfeeding and risk of diarrheal disease in children less than five years of age in Pakistan

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Abstract

Background: In Pakistan, diarrheal disease accounts annually 53,300 deaths among children aged less than five years of age and continues to act as the leading cause of child mortality. Breastfeeding offers significant protection against diarrheal morbidity and mortality. Despite decades of evidence built supporting the protective and cost-effective health impacts of breastfeeding on child survival the practice is low in developing countries, like Pakistan. This study aimed to investigate the breastfeeding practices and other possible risk factors as they relate to diarrheal incidence among children less than five years of age.

Methods: A secondary analysis of data taken from PDHS (Pakistan Demographic and Health Survey 2006-2007) was conducted. In the case of the current analysis, a filtered sample of 5724 respondents was selected. These are women who gave birth in past 5 years. Briefly describing, the selected independent variables included respondent's socio-economic status, environmental factors, the age of child, breastfeeding practices, diarrheal incidence in children as reported by the respondent. The results were reported in terms of Frequencies, Percentages, Odds ratios, multivariate correlational matrix and significance (*P-values*) with 95% confidence intervals of associating variables.

Results: The data results show a highly significant association with respect to the associations between various socio-economic, demographic, environment, breast milk and other feeding factors with diarrheal incidence.

Conclusion: With many important new findings and some revisited evidence the study can contribute on both research and policy directions for future, in the context of Pakistan.

Key words: Breastfeeding, Pakistan, Diarrhea, Children less than 5 years of age

Background

Diarrhea is the principal reason of child mortality in South Asian countries (Rheingans, Kukla, Faruque, et al 2012). In Pakistan, diarrheal disease accounts annually 53,300 deaths among children aged less than five years of age and continues to act as the number one cause of child mortality (World Health Organization 2009). Diarrheal disease is known to be caused by multiple risks. Most importantly, these include socio-economic, demographic, environmental and dietary factors (Strand, Gjessing, Ulak, et al 2012). Furthermore, in children up to six months of age not careful feeding practices can increase the risk of death due to diarrhea (Abdullah 2010).

Breastfeeding offers significant protection against diarrheal morbidity and mortality. The protection is also noted to decline steadily with increase in age of the child (World Health Organization 2009). Considerable amount of literature has estimated marked reduction of infant mortality by promoting exclusive breastfeeding (Perin, Aryee, Boschi-Pinto, et al 2012;

Strand, Gjessing, Ulak, et al 2012; Lamberti, Walker and Black 2012). In the context of Pakistan, infant morbidity and mortality ratio have been significantly reduced with the exclusive breast feeding practices for initial 6 months and up to 24 months of age (World Health Organization 2009). The single most cost effective intervention to reduce infant morbidity and mortality in developing countries is the promotion of exclusive breastfeeding in 0-6 months of age and careful additive feeding up to 5 years of age. Based on the evidence World Health Organization recommended exclusive breastfeeding for infants aged up to six months in community guidelines (World Health Organization 2009).

Despite decades of evidence built supporting the protective and cost-effective health impacts of breastfeeding on child survival the practice is

low in developing countries like Pakistan (Premani, Kurji and Mithani 2011). Not to mention the preventable yet wide spread distribution of low sanitation and environmental risks.

Building upon this context, we aimed to investigate the breastfeeding practices and other possible risk factors as they relate to diarrheal incidence among children less than five years of age, in general. More specifically, the study objectives include finding out the correlation between various forms of breast feeding with diarrhea in children; administration of other liquids in 0-6 months old infants with diarrheal incidence; various types of water source with diarrheal incidence; sanitation conditions of residence with diarrheal incidence; socio economic status with diarrheal incidence; age of the child with diarrheal incidence.

Methods

A secondary analysis of data taken from PDHS (Pakistan Demographic and Health Survey 2006-2007) was conducted. Respondents who provided information for the survey were ever married women, aged 15-49 years. In the case of the current analysis, a filtered sample of 5724 respondents was selected. These are women who gave birth in past 5 years. This particular sample was taken for two reasons. One was to select maximum number of women who have children in the targeted age group and the other to ensure the minimization of recall bias in the data.

Briefly describing, the selected independent variables included respondent's socio-economic status based on her type of residence, region of residence, education level and wealth index placing; environmental factors included respondent's and her children's sanitation conditions based on the source of drinking water, type of toilet and type of cooking fuel; the age of child as reported by the respondent. This variable of age has been recoded to those aged 0-24 months and those aged 24 months and above; of education level was recoded by combining groups of no education and primary education ;and of wealth index by reducing it from 5 to 3 categories scale. Note that respondents selected for this study are those who have given birth in last 5 years; breastfeeding practices as reported by the respondent in terms of having breast feed their chil-

dren or not; having feed with bottle and nipple or both/non; and within those who breast feed, was it exclusive breast feeding or other foods and liquids items were also feed. Dependent variable was diarrheal incidence reported by the respondent i.e.; her child have had diarrhea in the last two weeks or not.

Initially, descriptive and bivariate analysis was carried out to understand the general trend of independent covariates in relation to diarrheal incidence. As most of the independent problem bases variables had two categories, one represented the occurrence and other nonoccurrence of an event. A multivariate logistic regression model was selected to explore how various regressors affect the chance of occurrence of an event. These results are reported in terms of Frequencies, Percentages, Odds ratios, multivariate correlational matrix and significance P-values with 95% confidence intervals of associating variables.

Results and discussion

Table 1 describes the descriptive and bivariate statistics of socio-economic profile of respondent's and their children in relation to the presence/ absence of diarrheal disease in the children under five years of age. The cross-tabulation of the dependent variable with type of residence shows a non significant relationship with 61.5% sample from rural areas. Thus urban area sample is under represented. The prevalence of diarrhea in the rural areas is slightly higher than the urban area that is 17.01%, possibly due to the skewness of the rural sample. In the region of residence, NWFP is leading in prevalence of diarrhea with 19.59% cases followed by the Sindh with 18.97 cases. This association has been estimated to be highly significant and a p value of 0.00. The education level variable shows that a major chunk of 80.1% of the respondents has no education to primary education only. With the significance of 0.03, the ratio of respondents whose children had diarrhea to those who did not, decreased with the increase in education level of the mother of the child. These findings are also supported by those suggested by Shukr, Ali, Khanum, et al 2009. For wealth index placement of the respondent almost equal number of cases were presented in the categories of poor and rich. However the percentage

decrease in children reported to have and not have diarrhea was marked significantly ($p=0.00$) with the increase in wealth index placing. The results of poor wealth index placement and rural living as risk factors for diarrheal disease reaffirm the findings suggested by Arif and Naheed 2012.

Table 2 explains the cross-tabulation between various environmental and sanitation related variables which came out to be significantly associated with diarrheal incidence among children exposed to it. There was a significant correlation ($p=0.02$) between source of drinking water and diarrheal incidence. Kausar, Maann, Zafar, et al 2012 suggest that the percentage of having diarrheal disease decreased with source which ensured sterility of the water. Consequently, according to our findings, children whose drinking water source is rain water 34.62%, tanker truck water 24.62% and unprotected spring water 21.95% are more likely than those drinking from bottled water and other sources. Arif and Naheed 2012 enlisted sanitation and type of toilet facility in residence as a factor of diarrheal disease in children. Current findings restate that the percentage of having diarrheal disease and not varied significantly ($p=0.00$) with developed infrastructure and less exposure of the toilet to open environment. Pit latrine without slab/open pit 24.30%, Bucket toilet

20.80% and No facility/bush/field 20.09% were the highest exposure factors of diarrheal disease risk in children. Majority of the respondents were told to use wood 49.9% and natural gas 26.6% as cooking fuel. A significant association ($p=0.00$) has been developed between diarrheal incidence and cooking fuel type, most importantly cooking by using electricity 27.27%, straw/shrubs/grass 25.26%, agriculture crop 21.67% and biogas 21.37%. No study has been identified that tries to correlate cooking fuel with childhood diarrhoea.

Table 3 demonstrates a cross tabulation with age of child and breast milk and other feeding practices with diarrheal incidence in children of 0 to 5 years of age. 58.5% of the mothers reported their children to be under the age of 24 months. Significantly, children older than 24 months 34.82% are found out to be more likely to have diarrheal disease. World Health Organization reported in 2009 the differences in age groups as risk factors for diarrhea among different countries was due to their cultural difference. The assumption that the diarrheal incidence (with in less than five years of age) reduces with age is subject to debate keeping in mind increase in risk factor exposure with increasing age of child. A mix of results of significant diarrheal incidence was shown on correlating Breastfeeding

Table 1. Cross Tabulation Socio Economic Status and Diarrheal Incidence

	Total	Total	Had Diarrhea		Did not have Diarrhea	
	N	%	n	%	n	%
Type of Residence	5724	100	950	16.60	4774	83.40
Urban	2202	38.5	351	15.94	1851	84.06
Rural	3522	61.5	599	17.01	2923	82.99
Region of Residence*	5724	100	950	16.60	4774	83.40
Punjab	2374	41.5	349	14.70	2025	85.30
Sindh	1534	26.8	291	18.97	1243	81.03
NWFP	1113	19.4	218	19.59	895	80.41
Balochistan	703	12.3	92	13.09	611	86.91
Education Level*	5724	100	950	16.60	4774	83.40
No Education to Primary	4583	80.1	784	17.11	3799	82.89
Secondary	772	13.5	122	15.80	650	84.20
Higher	369	6.4	44	11.92	325	88.08
Wealth Index*	5724	100	950	16.60	4774	83.40
Poor	2302	40.2	458	19.90	1844	80.10
Middle	1127	19.7	183	16.24	944	83.76
Rich	2295	40.1	309	13.46	1986	86.54

* Denotes a significant relationship with p values of 0.00, 0.03 and 0.00 of region of residence, education level and wealth index respectively

Table 2. Cross Tabulation Environmental Sanitation and Diarrheal Incidence

			Had Diarrhea		Did not have Diarrhea	
	Total N	Total %	N	%	n	%
Source of Water*	5517	100	901	16.33	4616	83.67
Piped into dwelling	1682	29.4	245	14.57	1437	85.43
Piped to yard/plot	366	6.4	63	17.21	303	82.79
Public tap/standpipe	136	2.4	29	21.32	107	78.68
Tube well or borehole	772	13.5	110	14.25	662	85.75
Hand pump	1733	30.3	318	18.35	1415	81.65
Protected well	295	5.2	41	13.90	254	86.10
Unprotected well	78	1.4	10	12.82	68	87.18
Protected spring	55	1.0	8	14.55	47	85.45
Unprotected spring	41	0.7	9	21.95	32	78.05
River/dam/lake/ponds/stream/canal/irrigation channel	161	2.8	28	17.39	133	82.61
Rainwater	26	0.5	9	34.62	17	65.38
Tanker truck	65	1.1	16	24.62	49	75.38
Cart with small tank	31	0.5	6	19.35	25	80.65
Bottled water	29	0.5	4	13.79	25	86.21
Other	47	0.8	5	10.64	42	89.36
Type of Toilet*	11032	100	1804	16.35	9228	83.65
Flush to sewer system	1780	31.1	281	15.79	1499	84.21
Flush to septic tank	993	17.3	124	12.49	869	87.51
Flush to somewhere else	371	6.5	56	15.09	315	84.91
Flust, don't know where	110	1.9	15	13.64	95	86.36
Ventilated improved pit latrine	36	0.6	3	8.33	33	91.67
Pit latrine with slab	93	1.6	18	19.35	75	80.65
Pit latrine without slab/open pit	214	3.7	52	24.30	162	75.70
No facility/bush/field	1498	26.2	301	20.09	1197	79.91
Bucket toilet	125	2.2	26	20.80	99	79.20
Hanging toilet/latrine	294	5.1	26	8.84	268	91.16
Other	3	0.1	0	0.00	3	100.00
Type of Cooking Fuel*	5515	100	902	16.36	4613	83.64
Electricity	22	0.4	6	27.27	16	72.73
Cylinder gas	294	5.1	38	12.93	256	87.07
Natural gas	1525	26.6	217	14.23	1308	85.77
Biogas	131	2.3	28	21.37	103	78.63
Kerosene	2	0.0	0	0.00	2	100.00
Charcoal	25	0.4	4	16.00	21	84.00
Wood	2859	49.9	481	16.82	2378	83.18
Straw / shrubs / grass	190	3.3	48	25.26	142	74.74
Agricultural crop	120	2.1	26	21.67	94	78.33
Animal dung	342	6.0	54	15.79	288	84.21
Other	5	0.0	0	0.00	5	100.00

* Denotes a highly significant relationship with *p* values of 0.02, 0.00 and 0.00 of Source of drinking water, type of toilet used and type of cooking fuel uses respectively

(Yes or No) and Drank from bottle and nipple (Yes or No). This was cleared upon cross tabulating both variables with each other, as there were overlapping cases who breastfed as well as fed milk to children with bottle and nipple. Thus, concluded to be a mistake in the close ended answer category.

Riordan reports as early as in the 1990's the increase medical treatment and disease Costs for children with acute episodes of diarrhea and other infectious diseases due to not Breastfeeding. A

significant relationship ($p=0.00$) was found in our analysis to be between the duration in months of breast feeding a child and diarrheal incidence. Children reported to be still breastfeeding 35.7% and breast feed up to 7 to 12 months 32.7% where most likely to have the disease compared to those feed up to 19 to 24 months 18.4%. Pooled analysis of many studies from various countries including studies from Pakistan advise upon the practice of exclusive breast feeding to child for minimum of 0-6 months

Table 3. Cross Tabulation Age of Child & Breast feeding practices with Diarrheal Incidence

			Had Diarrhea		Odds ratio	Confidence Interval 95%	
	Total N	Total %	n	%		Lower	Upper
Age of Child*	5724	100	950	16.60			
0 to 24 months	3346	58.5	122	3.65	1	1	1
24 months and above	2378	41.5	828	34.82	0.071	0.058	0.086
Brest Feed*	5724	100	950	16.60			
No	2648	46.3	24	0.91	0.021	0.014	0.032
Yes	3076	53.7	926	30.10	1	1	1
Drank from bottle with nipple*	5724	100	950	16.60			
No	2531	44.2	748	29.55	1	1	1
Yes	3193	55.8	202	6.33	6.212	5.261	7.334
Duration of Breastfeed*	3082	100	918	29.8	-	-	-
0 to 6 months	233	4.1	63	27.0	-	-	-
7 to 12 months	226	3.9	74	32.7	-	-	-
13 to 18 months	234	4.1	54	23.1	-	-	-
19 to 24 months	539	9.4	99	18.4	-	-	-
Never breastfed	180	3.1	35	19.4	-	-	-
Still breastfeeding	1663	29.1	593	35.7	-	-	-
Don't Know	7	0.1	0.00	0.00	-	-	-
^lBreast milk & Other feeding Practices	3037	100.0	915	30.13	-	-	-
Exclusive breastfeed*	1100	27.6	292	26.5	0.998	0.769	1.294
Given milk other than breast milk	761	19.1	248	32.6	1.218	0.968	1.531
Given plain water	240	6.0	82	34.2	1.249	0.930	1.679
Given sugar/glucose water	454	11.4	135	29.7	1.007	0.787	1.289
Given fruit juice	1	0.0	0.00	0.00	-	-	-
Given infant formula	65	1.6	17	26.2	0.878	0.495	1.556
Given tea/infusions*	449	11.3	164	36.5	1.514	1.154	1.986
Given ghee/butter*	199	5.0	83	41.7	1.735	1.272	2.368
Given ghutee	564	14.2	174	30.7	1.192	0.806	1.763
Given CS Herbs/traditional medicines	138	3.5	44	31.9	0.879	0.272	2.844
Given others	14	0.4	4	38.6	0.998	0.769	1.294

* Denotes a highly significant relationship with p values of 0.00, 0.00.00, 0.00, 0.00, 0.001 and 0.00 of age of child, breast feed, bottle feeding, exclusive breastfeeding, duration of breastfeeding, tea/infusion and ghee/butter respectively^l denotes sample cases which report practices concerning to the last/ youngest child. This sample was selected to remove the possibility of recall bias, these are multiple response categories. For the calculation of odds ratios Yes, for exclusive breastfeeding and No, for anything other than exclusive breastfeeding were taken as reference categories.

of age and up to 24 months with added selective feeding and liquids (Lamberti, Walker and Black 2012; Perin, Aryee, Boschi-Pinto, et al 2012; Afzal et al 2010). A practice of exclusive breast feeding 26.5% is likely to have least chances of having diarrhea, significantly. With regard to administering other foods and liquids while breast feeding, ghee/butter 41.7% and tea/other similar infusions 36.5% came out to be significant risk factors for diarrheal disease among children of targeted age group.

The bivariate logistic regression analysis signify the higher odds of diarrheal disease risk in children aged 24 months and above, who drink milk in bottles with nipples, who are given tea/ other similar infusions and ghee/butter along with breast feed or separately in less than 5 years of age.

Upon extracting the Multivariate logistic regression model for the significant variables confirms the findings that odds of diarrheal disease risk are more for children with increase in age, who are given tea or other similar infusions and ghee or butter (along with breast feed or separately). The results of breast feed and bottle milk nipple were skewed due to data categorisation error mentioned before. The odds of diarrheal disease with exclusive breastfeeding shows mixed results with an odds ratio ranging on both ends.

The correlation matrix shows that odds of diarrheal disease risk are inversely proportionate with the age of a child. As we hypothesized that the younger the age the higher the risk to have diarrheal disease, and the older age was taken as the reference category. The results are suggestive that the risk of diarrheal disease is lesser for younger age category and more for older age category. Those children who are given tea or other similar infusions and ghee or butter (along with breast feed or separately) show an inverse and direct proportionate relationship with diarrheal disease. The results of breast feed and bottle milk nipple were skewed due to data categorisation error this shows no directed relationship. The direction of diarrheal disease with exclusive breastfeeding shows slight tilt towards inverse proportionality, because resultant odds ratio was ranging from high to low risk (0.944-1.359).

The study had some limitations as it was a secondary data source thus other important variables (identified in literature) could not be added and some variables yielded mixed results. The data especially the variables relating socio-economic status and overall breastfeeding and bottle feeding was highly skewed. Indicators of hospitalization and diarrheal disease care were not covered in our study.

Table 4. Multivariate logistic regression variables summary

	Standard Error	Significance	Odds Ratio	95% C.I. for EXP(B)	
				Lower	Upper
Age of Child	.111	.000	.344	.277	.428
Breast Fed	13910.417	.999	.000	.000	.
Bottle Milk with nipple	.102	.285	1.116	.913	1.364
Exclusive breastfeed	.093	.179	1.133	.944	1.359
Given Tea/infusions	.117	.011	1.348	1.071	1.696
Given Ghee/butter	.158	.000	1.761	1.291	2.401
Constant	.074	.000	.444		

Table 5. Correlation Matrix

	Constant	Age of Child	Breast Fed	Bottle Milk with nipple	Exclusive breastfeed	Given Tea/infusions	Given Ghee/butter
Constant	1.000						
Age of Child	-.240	1.000					
Breast Fed	.000	.000	1.000				
Bottle Milk with nipple	-.256	.014	.000	1.000			
Exclusive breastfeed	-.680	.004	.000	-.088	1.000		
Given Tea/infusions	-.037	.003	.000	.144	-.339	1.000	
Given Ghee/butter	-.010	-.036	.000	.073	-.232	.117	1.000

Conclusions

The secondary analysis of the Pakistan Demographic Health Survey data concludes mostly on a significant note with respect to the associations between various socio-economic, demographic, environment, breast milk and other feeding factors with diarrheal incidence. With many important new findings and some revisited evidence the study can contribute on both research and policy directions for future, in the context of Pakistan.

Suggestively, further researches on effects of various drinking water sources especially rain water, tanker truck water and unprotected spring water on diarrheal disease incidence; effects of various cooking fuel types, most importantly cooking by using electricity, straw/shrubs/grass, agriculture crop and biogas on diarrheal disease incidence; and effects of administering other foods and liquids while breast feeding in infants must be conducted.

For policy makers Children above 24 months and with in school age must be the main focus of all policy intervention regarding decreasing diarrheal disease incidence. Effective policies must be developed to reduce infant morbidity and mortality burden on diarrheal disease in Pakistan by promoting exclusive breast feeding practices for initial 6 months and up to 24 months of age. To decrease diarrheal disease incidence most effectively cultural and environmental dimensions of interventions and community management must be taken into account.

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Abstract

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Key words: Camera ready paper, Journal.

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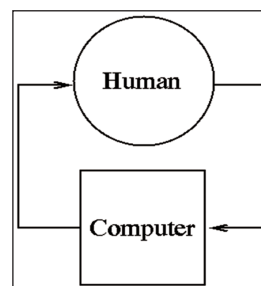


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Conclusion

Be brief and give most important conclusion from your paper. Do not use equations and figures here.

Acknowledgements (If any)

These and the Reference headings are in bold but have no numbers.

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1. Sakane T, Takeno M, Suzuki N, Inaba G. Behcet's disease. *N Engl J Med* 1999; 341: 1284–1291.
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