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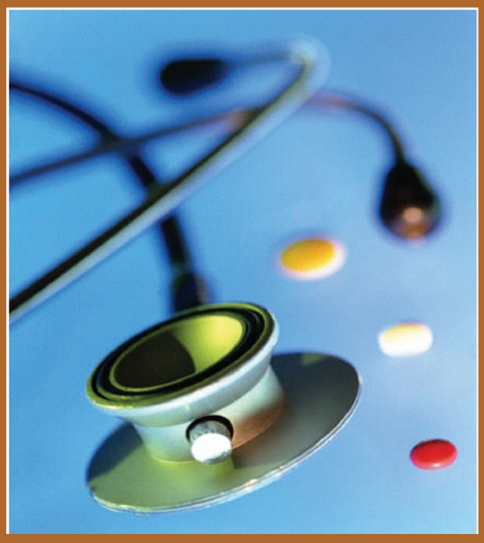

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Editorial

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Routine HIV Testing - What is the evidence?

Routine HIV testing without specific consent from the patient has begun in many institutes of Nepal. If any practice is Unethical, Useless or Harmful it must be stopped and at the same time if its Ethical, Useful then it must be encouraged. Lets us see if this practice of routine HIV testing is any of above.

It was in 1968 that WHO defined criteria for implementing a program of mandatory testing:

1. Condition being tested is an important health problem.
2. If tested positive there should be an accepted treatment.
3. Facility for diagnosis and treatment are available.
4. There should be a recognizable early symptomatic – latent phase.
5. Suitable test for the examination exists.
6. Test is acceptable to the population.
7. Natural history specially progress from latent to declared disease is understood.
8. There is an agreed policy on whom to treat as problems.
9. Economic balance from screen, diagnosis and management.
10. It should be an ongoing process and not once for all project.

Most of these criteria are invalid as far as HIV/AIDS is concerned.Doctors have long been asking how long is AIDS going to be considered so special that even diagnostic tests need consent?
When asked why should HIV test be ordered without consent most physicians will cite that the main reason is to protect transmission of the infection into the healthcare system. Now lets seriously reflect if this common goal cited by all is actually achieved by the practice of routine HIV testing?

Understanding of HIV and its management has changed in the last 20 years. Unfortunately the attitude towards this condition does not appear to have changed correspondingly. Looking back at the key researches of the last 20 years for and against routine HIV testing and taking the key messages could be one of the ways to have a fresh view of this situation. Four key issues were noted:

Key Issue 1: Some basic facts.
Unless we are aware of some facts about HIV / AIDS it wont be prudent to conclude about the condition. Here are some basic facts of HIV and AIDS.

Most policies for AIDS are based on political considerations and not scientific ones.Lets us review some basic facts:

1. Incidence of HIV in USA is reported at ~ 55,000 per year.
2. This incidence is unchanged since 1998.
3. World wide we have about 40 million HIV positive cases.
4. Of all the HIV positive population 25% are unaware that they are infected.
5. In USA this translates to 250,000 citizens.
6. 40% of patients are diagnosed within 1 year of fully developing AIDS. This means that the majority of patients are diagnosed only after they are ill. Correspondingly they have poorer prognosis.

Key Issue 2: Perinatal HIV testing.

It was in 1994 that we found that if antiretroviral therapy was administered to HIV positive pregnant women it significantly reduces the likelihood of perinatal transmission.

1999 IOM report "Reducing the Odds: Preventing Perinatal Transmission of AIDS in United States" recommended to eliminate the requirements for pretest counseling and written consent for HIV testing and advised that patient be tested unless they refused the test. This was one of the first real mass testing of HIV on a defined population that had scientific backing rather than political. This recommendation was backed by American College of Obstetricians and Gynecologists. Routine testing of pregnant women and treating the positives reduced the incidence of HIV in new borns from 1650 in 1991 to about 200 nowadays. This is one defined group where routine HIV testing is distinctly useful.

Key Issue 3: Prevention of Positives is the Goal.

In managing AIDS the paradigm must be towards "Prevention of positives". We must curtail the incidence and not focus only on better cures to the established AIDS patient.This is one area of medicine where Prevention is distinctly better than the cure" This paradigm has four mandatory components:

1. Making HIV testing routine part of health care.
2. Using rapid HIV tests outside medical settings.
3. Prevent new infections by working with HIV positives and their partners.
4. Decreasing perinatal HIV transmission.

Here we must stress that if the result is positive then this population substantially reduces the prevalence of unprotected sex with uninfected partners by about 68%. People who don't know that they are infected are 3.5 times more likely to infect others than those who are. But if the result is negative then such individuals do not reduce their risk behavior patterns. Now if prevention of positives is our goal then we would definitely like to see reduction in risk behavior patterns in the vast majority of clean / negative populations. Routine HIV tests bring changes in behavior only in positive cases. The benefit desired is not attained.

Behavior and expected transmission risk:

1. Woman will pick infection from HIV+ male through one vaginal intercourse event = 50%.
2. Man will pick infection from HIV+ lady through one vaginal intercourse event = 12%.
3. One homosexual bout of anal receptive intercourse will lead to HIV infection 50 to 1.
4. Needle stick from HIV+ patient will lead to HIV infection in health care professional 1 in 200.
5. Male with active gonorrhea will infect a female sex partner with one episode of vaginal intercourse =50%.
6. Female with active gonorrhea will infect a male sex partner with one episode of vaginal intercourse = 25%.
7. Male with HbV will infect female sex partner with one episode of vaginal intercourse 1 in 63.
8. Female with HbV will infect male sex partner with one episode of vaginal intercourse 1 in 90.

To summarize:

- Gonorrrhoea and HbV are more likely to spread in casual sex than HIV.
- HIV is not easy to transfer through sex than other STD.
- Hepatitis is more likely to kill than HIV in the short term.
- HIV virus is a weakly transmitted risk but UNPROTECTED SEX is not worth it.

In 22 September 2006 CDC recommended that all teenage to 64 year old adults must have a routine HIV test as a normal part of medical practice irrespective of risk factors or HIV prevalence in the community.

Here health care workers

1. Inform the patient that HIV testing is planned.
2. Give basic information about HIV and the meaning of the result.
3. Offer opportunity to ask questions and decline the test.

Here they are no longer required to sign a separate form for HIV testing. Instead the consent for HIV testing is incorporated into the general consent for medical care unless the patient specifically opts out. This recommendation does not have the force of the law.This signals a different and new standard of care and worldwide understanding of the disease. The idea was to make sure everyone has lifesaving information on whether they are infected.This applies only in health care settings.In 2008 survey of American Foundation of AIDS Research it was clearly found that 25% of the Americans will find living with a HIV positive person a very genuine problem.This is the basis of the argument that HIV test cannot be seen in the same light as that of other tests.

The stigma is EXTRAORDINARY in all countries. To top this up the HIV positive population is already the vulnerable population of any society. Patients tested late in the course of their infection also lack access to health care. This extremely sad truth cannot be undermined, that not everyone who needs HIV treatment gets it. Here is where politics of medicine is brutally manifested in all nations.

So routine testing will miss the most appropriate population. No matter how much we talk of pre test counseling with the choice of opting out, busy clinics with harried doctors will mean shortcuts will be taken and the tests ordered without optimal counseling.

Our primary target is prevention of newer cases. Increasing HIV testing appears necessary but not sufficient for this purpose. Testing is only one part of the broader program of comprehensive AIDS management. The biggest misfortune will be detecting some million more cases with no resource to treat them.

Key Issue 4: Knowing what tests are available:

1. ELIZA is the only test approved by FDA and CDC for rapid HIV testingand Western Blot is considered diagnostic.
2. Combined they can give an accuracy rate of 99%. This means that for every 100,000 testes performed 1000 will be WRONG.
3. In the US 0.6% of the population is HIV positive i.e 1 in every 167.
4. This translates to 60 individuals of the 1000 errors will have HIV infection but will test negative AND will spread their disease every day.
5. This is the impact of false negative test.

A false positive can also shatter lives. Such a person can feel that from nowon unprotected sex with HIV positives will not matter and he can actually acquire the disease.ELISA is recommended for early diagnosis at 6 months of exposure. The accuracy rate is as follows 50% @ 2 months, 90% @ 3 months, 95% @ 6 months, 99%+@12months post exposure.

Positive ELISA must be followed by Western Blot in all cases. The need for a second confirmatory test means a delay of approximately 3 weeks. Even if both are positive HIV infection is a POSSIBLE conclusion. False positive ELISA and False positive Western Blot represent 50% of all the False positive cases. Western Blot is considered positive if 2 of the following antigens are noted on the test strip p24, Gp41, Gp120 and Gp160.

Here I must stress again assuming a specificity of 99.5% and prevalence in the target population of 1%. The positive predictive value of this test would be 67%. This means 33 of 100 positive tests would be False Positives. If the prevalence is lower at 0.1% then the positive predictive value drops to 17% and 83 of 100 positives will be false positives. Can any society accept such figures? Mandatory screen will definitely subject a large population to unnecessary and unethical stigma of HIV/AIDS when they are perfectly healthy and clean. Similarly there will be also false negatives. Thus if the object is to protect health care system from infection, this is not possible by HIV tests alone.

P-24 Antigen test: This is part of the capsule that surround the AIDS antigen. Elevated P-24 levels

will be seen even before there is an elevated HIV antibody response. The Acute AIDS Syndrome seen inside 30 days of HIV exposure in 80% of patients is the time when the virus is replicating and the P-24 antigen levels are high. Individuals who develop this have a higher viral load and can have HIV antibody 2-3 weeks after the exposure. 100% of patients with Acute AIDS Syndrome will have at least one positive test for HIV within 3 weeks of exposure.

RNA PCR= Quantitative Viral Burden Test:

Approved only for monitoring therapy and not diagnosis of AIDS.

Risk benefit Analysis:

- Value of a mandatory test depends on the use of gathered data.
- Gain to the society needs balancing to the harm to the patient.
- Mandatory testing has all the appearance that something is being done to protect the target population say health care workers.
- Mandatory prehospital testing will make the management appear as a benign authority concerned with the safety of hospital staff.
- Such practice could be illusory, expensive, discriminatory and unjustified.
- If the target of testing was to prevent further transmission that can come only with safer behavior patterns then the pre and post test counseling are more valid measures.

Conclusions:

Hospitals have the moral obligation to protect their workers. In case of AIDS this is best achieved by adopting universal precautions and not relying on tests. The major draw back of universal precautions is that they do not prevent needle stick injury the most common cause of transmission to health care system. The compliance to universal precautions are very varied. Routine HIV testing can be applied in Perinatal situation and as a one time screen. In hospital routine HIV testing will be more illusory than effective.

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Lead Article:

Mental health service integration into primary health care

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The burden of mental illness on health and productivity throughout the world has long been profoundly underestimated. Data developed by the massive Global Burden of Disease study conducted by the World Health Organization, the World Bank, and Harvard University, reveal that mental illness, including suicide, accounts for over 15 percent of the burden of disease in established market economies, such as the United States

Mental disorders are found in all countries, in women and men, at all stages of life, among the rich and poor, in both rural and urban settings. Poverty, unemployment, war, internal conflict and stressful life situations further increase the burden of mental disorders. For the last so many years, political instability, poor economic growth, feelings of insecurity, high price rise in essential goods and increasing unemployment are more than enough to increase the life stresses in Nepal. Life stresses increase many mental disorders and also can cause physical diseases like heart disease, blood pressure, stomach ulcers and so on. So the burden of mental disorder may be high in Nepal.

Common misunderstanding about mental disorders and their treatment have contributed to the neglect of mental health service in the country. These misunderstandings are:

- Mental disorders are not major health problems in Nepal.
- Mental disorders can not be treated.
- People with mental disorders means only crazy, violent or unstable people and they should be restrained or locked up.
- There are no medicines for mental disorders, so mentally sick people should be taken to faith healers for faith healing treatment.
- Mental disorders are due to sin committed in past life, or because of bad stars in this life.

Such misunderstanding even in the educated people has led to lots of stigma in mental disorders. Unfortunately even the planners and policy makers do not give importance to the development of mental health. As a result, good infrastructure has developed in the area of physical health and almost none in mental health.

No health service is complete without attention to the mental health needs of the population. Impact of emotions and behavior on health is well known. A human body is not just the collection of many cells, organs and system. A human body is also an emotional body. Unless we consider the physical, mental and social needs of patients, they will not be satisfied from our health service. Psychological needs of human beings are equally important, and unless we address this issue, health service will remain incomplete.

In Nepal, general health service is integrated at the primary care level like district hospitals, primary health centers and health posts level manned by Medical Officers, . Both preventive and curative health services are provided from these centers. Some

of the essential medicines are also provided free of cost, till the stock of such medicines are their. This is definitely a good step though lots of improvement in the service delivery is still required. If mental health component can also be added in this infrastructure, people suffering from common mental disorders can receive the service from these centers.

When we talk of integrating mental health, health staffs think that it is an extra burden to their already over-burdened work. I would like to clarify that many common mental disorder patients are already coming to their out patient departments for the treatment. Anxiety disorders, depression, phobias, tension headaches, conversion disorder, alcohol related problems, etc come with lots of physical complaints. These people are never properly diagnosed and treated. It is because, health workers are not well trained to diagnose and treat such patients. Well where trained persons are there like MDGP, trained medical officers and trained paramedical staffs, they are already providing services to these people. So responsibility for mental health is not an extra load for primary health care services; on the contrary, it increases their effectiveness. If there is better diagnosis, good treatment and a bit of counseling, patients will be satisfied and so health staffs and the health service center both will become popular. On the other hand, neglect of the psychological and social component of health and the behavioral aspects of illness will remain a fundamental error.

I would like to give an example: Suppose a patient of depression comes to district hospital out patient department and complains aches and pains of body, loss of appetite, constipation, epigastric burning, weight loss and tingling and numbness of whole body. The doctor examines the patient and finds no physical health problem. He /she advise, X-ray, blood and urine tests and ultrasonography of abdomen and finds all reports are normal. The doctor advises the patient that all reports are normal and not to worry. The doctor may also write some pain killers or vitamins. But a patient of depression will not improve unless antidepressant medicine is given or good counseling done. If the doctor explores the other symptoms of depression, and makes a correct diagnosis, patient will be cured with proper medicines. The same thing applies to paramedical staffs also serving at PHC and health posts.

Simple skills of diagnosing common mental disorders will help to improve life of mental patients. Appropriately trained health professionals can diagnose common mental disorders. Referring mental disorder patients to appropriate place is much better than completely missing the diagnosis and giving wrong treatment.

Mental illness does not always need specialist treatment. A well trained MDGP or well trained medical graduate can diagnose common mental disorders and treat them. Even health staffs like health assistant or staff nurse, if well trained can do follow-up treatment of mental patients, monitor their improvement, and refer to psychiatric center when symptoms relapse.

Severe mental illness can be managed outside hospital. Less severe illnesses like different types of neurosis and depression are more common than severe mental illness. Psychotic illnesses like acute psychosis, acute mania, schizophrenia and post natal psychosis etc are relatively less common. For such patients, short term hospitalization in a psychiatric facility is better for proper diagnosis and initial treatment. But these cases also can be managed for follow-up treatment by a trained health staff at primary health care level. As present, specialist service is only available at medical college teaching hospitals, some government referral hospitals and at many hospitals in Kathmandu. But it is not always possible to come for follow-ups from long distance, because of economic and other factors. If follow-ups can be provided at the local level or community level, maintenance of treatment is easy.

So integrating mental health services into primary health care services is the most viable way of closing the treatment gap and ensuring that people get the mental health care they need. As such there is no single best practice model that can be followed by all countries.

In some countries trained nurses are running the community mental health services. In others, medical graduates are running the services. In some countries, there is a separate mental health staff to provide such services.

In Nepal, some district hospitals and primary health centers have heavy load of patients and there are limited staffs who are already over burdened. In such centers we will need addition staffs, most likely a trained health assistant to provide mental health service. In centers where there is not enough work loads, the existing staff can be trained to provide mental health service. Doctors of district hospitals and PHC's also need good orientation in mental health so that they can guide the mental health worker when necessary.

As training of health staffs takes time, it can be done phase wise choosing districts from where medical college hospitals or government referral hospitals are not nearby and health facilities are poor. Local medical college may also be given the responsibility of providing general health service and mental health if the government has difficulty in finding resources or manpower. NGO's working in mental health may also be given some districts to provide community mental health services for certain years till the government is able to take over the services.

Before integrating mental health service with the general

health service two points are very important. First, political commitment, a clear policy and plan, and a high-level coordinator in the Ministry of Health are essential. Without these, it will be difficult to convince the lower level managers to integrate mental health into primary health care. Second, regular supply of psychotropic medicines to the poor patients is an absolute necessity. Chronic mental patients need long term medications and poor patients can not afford it both because of their nature of illness and because of their poverty.

According to Department of Mental Health and Substance Abuse, World Health Organization, there are seven good reasons for integrating mental health into primary care and they are:

1. The burden of mental disorders is great. Mental disorders are prevalent in all societies. They create a substantial personal burden for affected individuals and their families, and they produce significant economic and social hardships that affect society as a whole.
2. Mental and physical health problems are interwoven. Many people suffer from both physical and mental health problems. Integrated primary care services help ensure that people are treated in a holistic manner, meeting the mental health needs of people with physical disorders, as well as the physical health needs of people of mental disorders.
3. The treatment gap for mental disorders is enormous. In all countries, there is a significant gap between the prevalence of mental disorders, on one hand, and the number of people receiving treatment and care, on the other hand. Primary care for mental health closes this gap.
4. Primary care for mental health enhances access. When mental health is integrated into primary care, people can access mental health service closer to their homes.
5. Primary care for mental health promotes respect of human rights. Mental health services delivered in primary care minimize stigma and discrimination.
6. Primary care for mental health is affordable and cost effective. Patients and families avoid indirect costs associated with seeking specialist care in distant locations. Treatment of common mental disorders is cost effective, and investments by governments can bring important benefits.
7. Primary care for mental health generates good health outcomes. The majority of people with mental disorders treated in primary care have good outcomes.

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Original Article

When it was not appendicitis - Retrospective review of 392 appendectomies.

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Keywords:
Appendectomy,
Negative appendectomy,
Perforated appendix.

ABSTRACT

Hypothesis: Appendectomy general surgery practice has diagnostic errors.Analysis of the negative appendectomies will guide future practice.

Methods: Retrospective study from August 2007 to October 2011. Operative notes and Histopathology records were traced.Inclusion criteria: Acute appendicitis posted for surgery. Exclusion criteria: Incidental or interval appendectomies were excluded.

Results : 392 appendectomies performed.303(77.3%) cases were acute appendicitis,187(80.6%) were male and 116 (72.5%) were female. Negative appendectomy were 89(22.7%) among them 45(19.4%) were male and 44(27.5%) were female ($p<0.05$). Perforated case were 64(21.12%) ; 43(23%) were male and 21(18.01%) were female $p>0.05$. Patients at the extremes age(<10 or >65 years) were more likely to have perforation 27.05% vs18.8%($p< 0.05$) than 10-65 years age group.Over all acute appendicitis cases- extremes age (<10 or >65 years) were 85(28.05%) and 10-65 years were 218(71.94%).Negative appendectomieshad appendicular related pathology in 9(2.48%)cases, 7(1.79%)cases were neoplastic lesion. Unrelated pathology was found in 74(20.44%) cases. Unknown causes were 8 (2.2%) cases.

Conclusion : CHRC has a negative appendectomy rate of 23% and a perforated appendix rate of 21%. Most of the perforated appendectomies were late arrivals to the hospital. They had perforated appendix as diagnosis on admission. The negative appendectomy rate especially in young women needs workup. High number of unusual pathologies in the resected appendix should make histopathology if the removed appendix mandatory.

INTRODUCTION:

Delay in early diagnosis will lead to complications with their attendant increased morbidity, while overzealous diagnosis may lead to an increased negative appendectomy rate. Complication rate of up to 6.1% following removal of normal appendices was reported[1]. Although more than a hundred years have elapsed since thefirst appendectomy carried out by Morton,suspected appendicitis still based mainly on the history and findings at physical examination. The clinical presentations are seldom typical and diagnostic errors are common[2-4].The lifetime risk of acute appendicitis for men and women is 8.6% and 6.7%, respectively. However, the lifetime risk of having an appendectomy is 12% for men and 25% for women [5-7].Straightforward diagnosisby clinicians, a high rate

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of misdiagnosis—often referredto as *negative appendectomy* (NA). Arecent population-based analysis[9] has confirmed the findingsof smaller clinical studies[8,10,11]that in more than 15% of appendectomiesperformed there is no pathologic evidence of appendicitis. Insome high-risk populations, such as women of reproductive ages,the population-based rate of unnecessary appendectomy is ashigh as 26%[9].While computed tomographic scanning, ultrasonography,and laparoscopy have been advocated to improve accuracy in thediagnosis of appendicitis, the benefit of these modalities inclinical trials[12] has not been realized in general practice.[10]Most of the surgeons, conventional wisdom suggests that if there isa question of appendicitis, appendectomy should be performedbecause the intervention may prevent perforation and becausethere will be little cost to the patient or to the system[13,1]. This assumption was challenged by Flum et al[5] they showed that patients who underwent negative appendectomy also were observed to have more comorbidities, longer length of hospital stay, and higher infection rates and case fatality rates. This and other studies described the significant burden of negative appendectomy and have clamored for better diagnostics in the management of acute appendicitis.

Regarding histopathology reports, numbers of previous papers have found significant pathologies, which may impact on patient management[14-19].Less than 50% of appendiculartumors are identified intraoperatively[20]. Further, parasitic infections, endometriosis, inflammatory bowel disease may be picked up from appendix specimens. There is also evidence that "naked eye normal" appendices may have evidence of an inflammatory and malignancy pathologic condition, which is only obvious at a molecular level [16].This study aims to evaluate the negative appendectomy; perforation rate and histopathology reports in patients subjected to appendectomy.

METHOD

The clinical data of 392 patients who have undergone appendectomy between August 2007 and October 2011 were collected retrospectively. Patient's age, sex, medical notes, operative records ,histopathology reports, were reviewed. The diagnosis of acute appendicitis was confirmed if there was infiltration with polymorphonuclearcell in the muscularispropria of the appendix. Other pathology was defined either intra-operatively by the surgeon, or described in the pathology report. When there was a discrepancy between the surgeon's operative diagnosis and the pathologist's diagnosis, based on gross and histological examination of the appendix, the pathologist's diagnosis was assumed to be correct..All incidental or interval appendectomies were excluded. Negative appendectomy is defined as one which is performed for a clinical diagnosis of acute appendicitis but in which the appendix is found to be normal on histopathological examination.This includes a histologically normal appendix with or without the presence of fecolith, Periappendicitis, Serositis, Fibrosis, or Helminthes in the lumen. Incidental appendectomy is defined as the removal of a normal appendix along with treatment of another pathology to avoid confusion of diagnosis of appendicitis later or to prevent metachronous metastasis in malignancy. Acute appendicitis patients divided into two age groups; extremes age (<10 years or >65 years) and 10-65 years groups.Statistical analysis was performed using theStatistical Package for the Social Sciences (Windows version 10.0; SPSS Inc, Chicago [IL], US)and x2 test.

Results with P value less than 0.05 were considered statistically significant.

RESULTS

During this study period 392 appendectomy performed.232 (59.18%) male and 160 (40.82%) female, Patients with median 28 years old (range 8months to -89years) respectively.Among them 303(77.3%) cases were acute appendicitis confirmed by histopathology reports ,187/232(80.6%) were male and 116/160 (72.5%) were female. Regarding negative appendectomy rate –total 89/392(22.7%) were histopathologicallynormal appendixes, among them 45/232(19.4%) were male and 44/160(27.5%) were female (p<0.05) **Table1**.

Table 1. Negative and positive Appendectomy rates as histopathology reports(n=392)

	Negative	Positive	Total
Male	45(19.4%)	187(80.6%)	232(59.18%)
Female	44(27.5%)	116(72.5%)	160(40.82%)
Total	89(22.7%)	303(77.3%)	392(100%)

Acute appendicitis cases were 303. Perforated case were 64(21.12%) ; 43(23%) were male and 21(18.01%)were female p>0.05. Compared the perforation rate in different age groups , patients at the extremes age(<10 or >65 years) were more likely to have perforation 27.05% vs18.8%(p< 0.05) than 10-65 years age group. **Table 2**.

Table 2. Perforated cases comparison to acute appendicitis cases(n=64)

Age	Male	Female	Total
<10 or >65 years	15(28.84%)	8(24.24%)	23(27.05%)
10-65 years	28(18.06%)	13(15.66%)	41(18.8%)
Total	43(23%)	21(18.1%)	64(21.12%)

Over all acute appendicitis cases extremes age (<10 or >65 years) were 85(28.05%) and 10-65 years were 218(71.94%) **Table 3**.

Table 3 Acute appendicitis as sex and age distribution (n=303)

Age	Male	Female	Total
<10 or >65 years	52	33	85
10-65 years	155	83	218
Total	187	116	303

Regarding negative appendectomy, appendix related pathology was found in 9(2.48%), 7(1.79%) were neoplastic lesion. Commonneoplasticlesionwerecarcinoid(n=2);adenocarcinoma (n=2);tubular adenoma(n=1),secondary metastatic deposition(n=1). Not related to appendix pathology was found in 74(20.44%) cases. Unknown cause were 8 (2.2%) **Table 4** and all recovered after appendectomy.

Not related to appendix	No	Related to appendix	No
Gynaecological conditions	24	Adenocarcinoma	2
Colonic diverticulitis	2	Mucinous cystadenoma	1
Perforated peptic ulcer	1	Tubular adenoma	1
Meckel's diverticulitis	2	Secondary Metastatic lesion	1
Distal ileal perforation	4	Carcinoid	2
Parasitic Colitis	21	Granulomatous peri appendicitis	2
Mesenteric lymphadenitis	15		
Ileo- caecal intussusceptions	3		
Unknown cause	8		
Total	74+8		7

Table 4.Negative appendectomy (n=89)

DISCUSSION

Usually our diagnosis of acute appendicitis is based mainly on a simple history compatible with acute appendicitis and pain at McBurney's point, and the treatment of choice in patients with right iliac fossa pain referring to acute appendicitis has been appendectomy. The accuracy of diagnosis by following these simple rules remains at the level of 70to 85%.The histopathological examination of the appendix serves two purposes. First, it allows the diagnosis of acute appendicitis to be confirmed, especially where this is not evident intra-operatively. Second, histopathological examinationmay disclose additional pathologies that may not be evident on gross examination intra-operatively but may affect subsequent clinical management of the patient.Specimens reported as negative for acute appendicitis are useful in eliminating acute appendicitis as a cause of symptoms and allowing further investigations to be performed should symptoms persist. Even in these negative appendicitis cases, patients' symptoms frequently disappear post-operatively. It has been suggested that in these cases there may be an early sub-clinical appendicitis[17]. In this study there were 8 cases clinically and physical examination diagnosed acute appendicitis, intra operative finding was normal, histopathology normal appendix; after removal of appendix, all sign and symptom disappear. These 8 cases we followed up to 7 months, there were no sign and symptoms.In a significant number of cases histological findings do not confirm the suspected preoperative diagnosis, resulting in a negativeappendectomy rate of 15 to 35% in most series, which is especially high in women of childbearing age [2, 21, 22, 11, 10]. In 10 to 30% of cases perforated appendix is found in theatre [24-28]. In our study negative appendectomy total 89(22.7%) among them 45(19.4%) were male and 44(27.5%) were female ($p<0.05$), Perforated case were 64(21.12%) ; 43(23%) were male and 21(18.01%)were female $p>0.05$. Comparison of the perforation rate in different age groups , patients at the extremes age(<10 or >65 years) were more likely to have perforation 27.05% vs18.8%($p< 0.05$) than 10-65 years age group. Patients of extreme age are more likely to have a delayed diagnosis due to atypical presentations and less efficient communication. Our resultsare parallel to recent article reports. Over all acute appendicitis cases in our study extremes age (<10 or >65 years) were 85(28.05%) and 10-65 years were 218(71.94%) .

Negative appendectomy and perforation of an inflamed appendix are the two main adverse outcomes in managing suspectedacute appendicitis. Decision 'to operate or not' is always a challenge even to a senior surgeon. The negative appendectomy rate in our study was 22.7%, which was higher to expected range. Negative appendectomy rates of 10–20% have been accepted in order to minimize the incidence of perforated appendicitis with its increased morbidity. Wide variations in negative appendectomy rates have been reported with rates ranging from 9% to 45% [23, 33, 34,36].Negative rate of 22.7% is certainly higher than the accepted standards. It therefore draws our attention to newermodalities with a better sensitivity and specificity like CRP, other inflammatory markers ,CECT[35]. Its widespread use in the developing world however, is not practical due to its high cost. Although at our centre we do not have any experience with computed tomography to diagnose acute appendicitis, the data from literature regarding its utility is promising. Specially in female patients biasshould be to exclude alternative diagnosis because the appendix is in close proximity to the reproductive organs in females, many common gynecological conditions like dysmenorrhea and ovarian cyst

complications can masquerade as acute appendicitis, thus accounting for their higher negative appendectomy rate.In our study appendix related pathology was found in 9(2.48%), 7(1.79%) were neoplastic lesion. Common neoplastic lesion were carcinoid(n=2)0.5% higher than other studies[31,32]. Adenocarcinoma (n=2) 0.5% consistent with figures from other studies [32];tubular adenoma(n=1),secondary metastatic deposition(n=1). Granulomatous appendicitis was another inflammatory lesion found in our series but is far less common, though the quoted point prevalence in western countries is 2%[29;30] .Not related to appendix pathology was found in 74(20.44%) cases. Most common cause were gynecological condition(n=24) and parasitic colitis(n= 21) followed by non specific mesenteric lymphadenitis (n=15)etc.

CONCLUSION

Appendectomy is a very common surgical procedure. From our own experience and a subsequent review of the literature, we recommend more intensive workup before appendectomy in a tertiary institutes. Judicious use of laparoscopy in elderly patients and fertile female patients may help to reduce the incidence of perforation and unnecessary appendectomies. The results of this study mandate routine histopathological examination of resected appendix specimens because of the presence of a numbers of unusual pathologies that may warrant a second operation or further treatments.

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Editorial Comments:

Negative appendectomy vs in hospital perforations are a very good quality-measuring tool for auditing surgery department. To improve the diagnostic accuracy of appendicitis repeated clinical examinations score very heavily as compared to other suggested imaging modalities. This is a very pertinent article.

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Original Article

Increased maternal BMI is associated with gestational complications: A retrospective study

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Keywords:
Maternal BMI,
Gestational age,
Induction,
Outcome

ABSTRACT

Objectives: To evaluate the effects of increased maternal BMI in gestational age and labor outcome

Materials and method: Retrospective study of 348 deliveriesconducted at Department of Obstetrics and Gynecology, Gandaki Medical College, Pokhara from August 2010 to October 2011. All the cases with singleton pregnancies and vertex presentation, unscarred uterus at 37 completed weeks or more were included in the study.

Results: Out of a total 348 deliveries, majority (80.2%) of women were between the ages of 21-30. Body mass Index (BMI) wise 303 (87.1%), women had normal BMI, where as 36 (10.3%) were overweight, 4 (1.1%) were obese and remaining 5(1.4%) were underweight. Similarly 170(48.9%) women were nulliparous. According to gestational age, 295(84.8%) of deliveries were in 37–42 weeks of pregnancy and remaining 53 (15.2%) were above 42 weeks. Similarly in this study 132 (37.9%) deliveries were selected for induction of labour (IOL), out of which 69.1% of cases had normal vaginal delivery and remaining 31.9% had cesarean delivery because of unsuccessful induction.

Conclusion: Increased maternal BMI is significantly associated with increased risk of prolonged gestational age and related complications ($p<0.01$). Also overweight or obese women have significantly high Incidence of IOL compared with normal BMI women with higher rate of failed induction resulting in cesarean delivery ($p<0.001$).

INTRODUCTION

The increase in number of overweight and obese women is a well-publicized public health problem in all over the world. The prevalence of obesity has steadily increasedbetween males and females, all ages, all racial/ethnic groups, and all educational levels [1]

Many studies have demonstratedthat obesity in pregnancy is associated with a widespectrum of adverse pregnancy outcomes includingincreased caesarean section rates,

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postpartum hemorrhage,higher risks of maternal hypertension and gestational diabetes, fetal birth defects and fetal death.[2–5] Obesity in pregnancy has also beenshown to be associated with longer gestation[6] andsignificantly increased risk of post-term delivery,[7–10] whichcontributes to the greater need for induction of labor(IOL) for prolonged pregnancy.[11–13]. As gestation progressesbeyond term, perinatal morbidity and mortality increase aswell as maternal complications such as pre-eclampsia, postpartum haemorrhage and caesarean delivery.[14-16]To reduce the risk of perinatal mortality inprolonged pregnancy, the National Institute for ClinicalExcellence antenatal care guidelines recommend that IOL isoffered between 41 and 42 weeks of gestation.[17] Continuation of pregnancy beyond 41 weeks increases the risk of adverse outcomes for the woman and the fetus. When compared to birth at 40 weeks, perinatal mortality is 2-fold higher at 42 weeks and 5-7 folds higher at 43 and 44 weeks.[17]A post-termpregnancy defines as one that has extended to or beyond 42weeks (294 days) of gestation.[17,26]

The exact mechanism of dysfunctional labor in the obese woman is not completely understood. Elevatedcholesterol level has been shown to decreaseuterine contractility, and obesewomen are more likely to have elevatedcholesterol levels than are normal-weightwomen.[18]This elevation in cholesterolmay contribute to the higher incidence ofdysfunctional labor in obese women andsubsequent cesarean delivery.

MATERIALS AND METHODS

We performed retrospective review of all deliveries (n=348), conducted at Department of Obstetrics and Gynecology, Gandaki Medical College from August 2010 to October 2011, using data from obstetric records. The cases with singleton pregnancies and vertex presentation, unscarred uterus at 37 completed weeks or more were included in this study. The informed consents were signed both by the pregnant mother and her relatives for the study. The cases with multiple pregnancy, other than vertex presentation, history of previous cesarean delivery, gestational period of <37 weeks, cases without proper consents and cases undergoing directly cesarean section for other reasons were excluded from this study.The maternal variables were age, height and weight at the time of admission, parity, gestational age at delivery, neonatal weight, mode of delivery with or without induction (IOL) and outcome of induction. Maternal body mass index (BMI)was calculated using BMI formula: maternal height (meter) and weight (kg) at the time of admission and were grouped into following catagories: underweight (<18.5), normal (18.5-24.9), overweight (25-29.9) and obese(30 & above). SPSS 12.0 software was used for statistical analysis. Cases undergoing directly cesarean section for various other reasons were excluded from this study.

RESULTS

The total number of deliveries meeting the inclusion criteria was 348 during the study period. Most women were between the ages of 21-30 (80.2%, n=279), where as 50 (17.1%) were 31 or above and 19 (5.7%) women were 20 years or younger in age. Out of a total, 303 (87.1%), women had normal BMI, where as 36(10.3%) were overweight, 4 (1.1%) were obese and remaining 5(1.4%) were underweight. Similarly 170(48.9%) women were nulliparous. According to gestational age, 295(84.8%) of deliveries were in 37–42 weeks of pregnancy and remaining 53 (15.2%) had above 42 weeks. As expected 299 (85.8%)newborns weighed 2.5 – 3.5 kg, 31 (9.0%) were below 2.5 kg and remaining 18 (5.2%) newborns weighed above 3.5 kg.Overall, 258 (74.1%) cases had normal vaginal delivery, 82 (23.6%) had unplanned cesarean section and rest 8 (2.3%) cases had assisted vaginal delivery which were also considered as normal. Similarly in this study 132 (37.9%) deliveries were selected for induction of labor (IOL) for variety of reasons (table 4). Failed induction was defined as no dilatation of cervix or no progression of labor with or without fetal distress after at least 12 hours of vaginal prostaglandin and another 24-48 hours of intravenous syntocinonthus leading to cesarean delivery.

RELATION OF BMI IN PROLONGED GESTATIONAL AGE OF LABOR

Prolongation of pregnancy was seen in 30% (12/40) of overweight or obese women comparing with 13.5% (41/303) of normal BMI women. We performed chi sq (x^2) statistical analysis to see the likelihood of prolonged pregnancy with increased maternal BMI. Compared with normal BMI group, women with increased BMI category are significantly in risk of prolonged gestation and related complications ($p<0.01$),

Table 1: Relationship between increased maternal BMI & gestational age of labour

		Gest age				
		37-42wk	above42wk	Total	x^2	*p* value
BMI	Normal	262	41	303		
	overwt /obese	28	12	40	7.33	*P*=0.07
Total		290	53	343		

Relation of BMI in induction of labor

Increase in maternal BMI was associated with high possibility of undergoing IOL. Overall, 94.2% (34/40) of overweight or obese women required IOL while only 32% (97/303) of normal and 20% (1/5)of underweight cases required IOL .Out of total 132 cases selected for IOL, 73.4% belonged to normal BMI

group, 25.7% were overweight or obese and remaining <1% were underweight. x^2 test was done to analyze the likelihood of incidence of IOL in increased maternal BMI group. The analysis clearly demonstrated that the possibility of IOL is significantly high in increased maternal BMI group compared with normal BMI group (p<0.001)

Table 2: Relationship between increased maternal BMI and incidence of IOL

		Induction		Total	x^2	p value
		Yes	No			
BMI	Normal	97	206	303	42.027	p<0.001
	overwt/obese	34	6	40		
Total		131	212	343		

Similarly,the overall rate of vaginal delivery after induction was 62.9% (83/132) and remaining 37.1% (49/132) had cesarean delivery because of failed induction. Moreover, 74% of women with normal BMI had successful vaginal delivery after induction, while only 32.3 % of overweight or obese women had normal vaginal delivery, the remaining 67.7% requiring cesarean delivery. The incidence of nulliparous and multiparous were almost identical in both normal (48% & 52%) and overweight or obese (45%&55%) groups. Again x^2 analysis was performed to see the relationship between increased BMI and failed induction leading to cesarean section, The analysis clearly showed that greater number of increased maternal BMI ending in cesarean delivery comparing with normal BMI after induction(p<0.001)

Table 3: Relationship between increased maternal BMI and outcome of IOL

		Induction		Total	x^2	p value
		Pass	Fail			
BMI	Normal/underwt	72	26	98		
	overwt/obese	11	23	34	18.283	p<0.001
Total		83	49	132		

All the women with <2.5 kg newborns had normal vaginal delivery after induction. In contrast 35.9% of newborns weighing 2.5-3.5 kg and 63.6% of newborns weighing >3.5 kg were delivered via cesarean section respectively.

Table 4: Indications for induction in 132 cases

Post term	37.9%
PROM	27.3%
Hypertensive disorder	9.8%
Oligohydramnious/IUFD	6.1%
Decreased FM	18.9%

DISCUSSION

The rising rate of obesity is not only a global public health concern, butalso presents frequent challenges to the obstetrician In the West, 28% of pregnant women are overweight and 11% are obese[19]. In the United States, theincidence of obesity in pregnancy varies from 18.5% to 38.3% according to the definition used[20,21]

Our study is consistent with those of others who found that maternal obesity is a significant risk factor for post-term delivery.[5-7,,9,11,13] We also demonstrated that incidence of IOL is significantly high in overweight or obese women and that IOL for these women was associated with increased rates of caesarean section delivery.

Studies have shown thatobese women more likely to be induced than women with normal BMI for fetal compromise and elevatedblood pressure. It appears, therefore, that obese women are more likely to need induction for multiple indications[11]. Howeverit is still unclear why obese women are lesslikely to go into spontaneous labor and why they mayexperience more fetal compromise, even in an absenceof other risk factors like hypertension, maternal diabetes etc,

In one study it has been cited that obesity is associated with uterine quiescence or a suppression of myometrial activity[3]. However in another study it has been suggested that the effect of obesity on myometrial activity is more important in delaying the onset of labour than in reducing myometrial function once labouris established[17].

This study also shows the higher incidence of normal vaginal delivery in low birth weight newborns (<2.5kg) and this incidence consequently decreases as the weight of newborns increases. According to most current studies[25], the rate varies from 9-33%of all pregnancies annually. Our series has little higher rate of induction (37.1%), probably because of longer study period.

Several studies have reported low failed induction rate in multiparas compared with nulliparas.[22-25], nonetheless we have not analyzed the relationship between parity, weight of newborns and maternal BMI. Also, the likelihood of delivery related or other complications in Increased BMI group has not been reviewed in this study, nevertheless the study shows that if induced, a pregnant woman will have >70 % chance of achieving normal vaginal delivery if normal BMI where as overweight or obese women will have > 65% of undergoing cesarean delivery following unsuccessful induction

CONCLUSION

Increased maternal BMI is significantly associated with increased risk of prolonged gestational age (p<0.01). Incidence of IOL is significantly high in overweight or obese women

with high failed induction rate requiring cesarean delivery ($p<0.001$).

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The prospective study determining the range of Intravenous Lorazepam in the management of alcohol withdrawal state

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Keywords:
ADS,
withdrawal complications,
lorazepam
Introduction:

ABSTRACT

Objective: Dosages of intravenous Lorazepam used in treatment of alcohol withdrawal state may widely vary.

Methods: This was a prospective, hospital based study with collaboration between the department of Neuropsychiatry, Emergency medicine and Internal medicine at Gandaki Medical College, Pokhara, Nepal. The duration of study was of six months, extending from 2010/06/01 to 2010/11/30. Subjects that fulfilled the criteria of alcohol withdrawal state with or without complication approved by the consultant neuropsychiatrist, based on ICD-10 criteria was included in the study. Use of intravenous lorazepam was based on symptom-triggered approach depending on frequent objective assessment of the patient. Intravenous lorazepam (4-8 mg) was used, at every half hourly to one hourly interval, till patient's condition was clinically sound. That was based on progressive improvement depending on the clinical observations like blood pressure, pulse rate, tremors and tremulousness, agitation, sweating, orientation and memory status. The physical co-morbidities were evaluated by the consultant physician and managed likewise.

Results: All the 34 subjects were male and almost all of them were married. The mean age of the subjects was 42.97(SD 10.01) years. Almost half of the subjects (52.94%, n= 18) were below 40 years of age. Among total subjects, the mean dose of intravenous lorazepam needed to be used was 247.35 (SD: 269.14) with minimum of 16mgs to maximum of 1286mgs.

Conclusion: The huge range of lorazepam signifies the importance of the treatment approach that needs to be individualized.

INTRODUCTION

Abrupt reduction or total cessation of long-term alcohol consumption produces a well-defined cluster of symptoms called acute alcohol withdrawal syndrome **(AWS).**[1] According to Diagnostic and Statistical Manual of Mental Disorders-IV- Text Revised (DSM-IV- TR), the current rate of alcohol dependence is 5 percent [2] while according to Cargiulo, 20% of hospitalized patients are dependent on alcohol. Symptoms may develop as soon as a few hours after cessation of alcohol intake.[3] Some patients experience relatively mild withdrawal

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symptoms. More serious withdrawal symptoms occur in approximately 10 percent of patients.[1] Seizures associated with alcohol withdrawal are stereotyped, generalized and tonic-clonic in character. Seizure usually begins 12 to 24 hours.[2] Seizures may occur in more than 5 percent of untreated patients in acute alcohol withdrawal. More than 90 percent of alcohol withdrawal seizures occur within 48 hours after the patient stops drinking. Fewer than 3 percent of such seizures may occur 5 to 20 days after the last drink.[1] Following the termination of alcohol consumption after sustained chronic use, the seizure threshold begins to decline.

The most serious complication of withdrawal, delirium tremens (**DTs**), presents in about 5% of all patient visits and carries a mortality of 5%–15%.[3] The mortality rate in DTs can be as high as 25 percent.[1] Therefore, DTs is a medical emergency that can result in significant morbidity and mortality. The essential feature of delirium is that it occurs within 1 week (specially during 72 hours) after a person stops drinking or reduces the intake of alcohol. Episodes of DTs usually begin in a patient's 30s or 40s after 5 to 15 years of heavy drinking.[2] Eventually, after acute withdrawal has subsided, a poorly defined syndrome of protracted withdrawal may ensue.[1] However, having said these, there are no reliable prognostic indices to estimate the occurrence or progression of alcohol withdrawal state.[4]

In the International Statistical Classification of Diseases and Related Health Problem- 10 (ICD10), alcohol withdrawal state is categorized as F10.3 and withdrawal state may be uncomplicated (F10.30) or with convulsions (F 10.31). If delirium is present, the diagnosis should be alcohol withdrawal state with delirium (DTs), categorized as F 10.4. [5]

Whatever the course of alcohol withdrawal syndrome might be, the goals of therapy for alcohol withdrawal syndrome include the safe and effective treatment of withdrawal symptoms, prevention of initial and recurrent seizures, and the prevention and treatment of delirium tremens[3].

METHODS OF STUDY

The objective of the study was to determine the range of intravenous lorazepam needed in the management of alcohol withdrawal state.

This was a prospective hospital-based study conducted at Gandaki Medical College Teaching Hospital & Research Centre (P) Ltd- Charak Hospital, Nayabazaar, Pokhara.

- The study was collaboration between the department of Neuropsychiatry, Emergency medicine and Internal medicine.
- The study period was of 6 months (2010/6/1 to 2010/11/30).
- Subjects that fulfilled the criteria of alcohol withdrawal state with or without complication approved by the consultant neuropsychiatrist, based on ICD-10 criteria was included in the study. Alcohol related conditions which failed to fulfill the withdrawal criteria like acute intoxication and harmful use were excluded from the study.
- The physical co-morbidities were evaluated by the consultant physician and managed likewise.
- After all ethical considerations, data were collected and analyzed by using Microsoft Excel and SPSS 12.0 software.

Use of intravenous lorazepam was based on symptom-triggered approach depending on frequent objective assessment of the patient. Intravenous lorazepam (4- 8 mg) was used, at every half hourly to one hourly interval, till patient's condition was clinically sound. That was based on progressive improvement depending on the clinical observations like blood pressure, pulse rate, tremors and tremulousness, agitation, sweating, orientation and memory status.

During the management other parameters like vitals status, input and output chartings, routine blood investigation, electrolytes and liver function test, use of vitamins specially thiamine, physical restrains when required and other necessary measures specially in presence of co morbidities when indicated were applied. The injectable lorazepam currently available for use is the injection lopez formulated by Intas pharmaceutical, India. The financial support for the study was none.

RESULTS

The total number of the subject were 34 (N=34). Nineteen subjects (55.89%) were admitted from the emergency department while 15 (44.11%) were from outpatient departments. All 34 subjects were male. The maximum age at presentation was 63 years and minimum age was 27 years. The mean age of the subjects was 42.97(SD 10.01) years. Almost half of the subjects (52.94%, n= 18) were below 40 years of age and remaining percent was above 40 years of age. (Table 1)

Table: 1 Showing the age group

S. N.	Age group	Frequency	Percentage
1	21- 30	4	11.77
2	31- 40	14	41.25
3	41- 50	8	23.52
4	51- 60	6	17.49
5	Above 60	2	5.97

Ninety seven percent (n= 33) of the subjects were married while only one subject was single. Fifty nine percent (n= 20) of the subjects were employed and ninety seven percent (n=33) of the subject were literate while only one subject had no formal education. (Table 2)

Table: 2 Showing literacy group

S.N.	Literacy group	Frequency	Percentage
1	Illiterates	1	2.9
2	Upto Class X	22	64.7
3	Class X and above	11	32.4

Based on ICD10 criteria; 21 subjects (61.7%) had a diagnosis of F10.30, 10 subjects (29.45%) had a diagnosis of F10.4 and 3 subjects (8.9%) had a diagnosis of F10.31. Out of those 10 cases of F10.4, two subjects had convulsion as well. (Table 3)

Table:3 Showing the diagnosis

S.N.	ICD10 Diagnosis	ICD Coding	Frequency	Percentage
1	Uncomplicated Alcohol withdrawal state	F 10.30	21	61.7
2	Alcohol withdrawal state with convulsion	F 10.31	3	8.9
3	Alcohol withdrawal state with delirium	F 10.4	10	29.45

Seventy three percent of the subjects had co-morbid acid-peptic disease with two of them presented with upper gastrointestinal bleeding with haematemesis while 58.8% had alcohol-induced liver disease. Pre-existing diabetes mellitus and rheumatic heart disease was present in each subject. The one of the subject had fall injury requiring exploratory laparotomy while the one other subject had cerebrovascular accident, hemorrhagic type at the time of presentation. The mortality was 2.9 %.

TREATMENT OUTCOME

Intravenous lorazepam was used for the treatment of all the subjects. Twenty one (61.76%) subjects were treated in ICU followed by the shift to the ward while 13 subjects (38.23%) were treated in ward setup only. Twenty two subjects (64.7%) who completed the treatment improved and were discharged. One patient expired and 11 (32.35%) were discharged on request before the completion of the treatment. Among total subjects (N= 34) the mean dose of intravenous lorazepam needed to be used was 247.35 (SD: 269.14) with minimum of 16mgs to maximum of 1286mgs. The length of hospital stay was maximum 32 days to minimum of 2 days only (Mean: 9.41; SD: 6.82).

Among total subjects who completed the treatment (n= 22) mean dose of intravenous lorazepam needed to be used was 336.45 (SD: 296.69) with minimum of 28mgs to maximum of 1286mgs. Seventeen subjects (77.27%) were treated in ICU followed by ward while 5 subjects were treated in ward setup only. The length of hospital stay for all was maximum 32 days to minimum of 3 days only (Mean: 11.27; SD: 7.61).

DISCUSSION

AWS has a various outcomes ranging from mild to severe life threatening state of DTs. Particularly in mildly alcohol-dependent persons symptoms may subside without treatment after a few days. [1] A person in good physical health rarely has DTs during alcohol withdrawal state. [2] In case of life threatening DTs, it requires intensive care and treatment. It is generally recommended that symptoms of withdrawal be treated aggressively to prevent further complications and limit any neurologic damage that may occur with AWS. [3] There are several medications that have been used and studied in the management of AWS and DTs; like benzodiazepine, anticonvulsant, bets- blockers and other. These multiple drug classes have been utilized as either single therapy or combination therapy for the management of AWS.[3] Available treatments suppress many symptoms and complications of AW.[1]

For many years, seizures and other symptoms of AWS have been treated with benzodiazepines [1] and still benzodiazepines are considered to be first line therapy for the treatment of AWS and the prevention and treatment of seizure activity and delirium tremens.[3] All benzodiazepines act on the same receptor, their efficacy is comparable.[6]

A meta-analysis of 11 trials, comprising 1,286 patients, which compared benzodiazepines with placebo or with an active control drug, showed that the use of benzodiazepines resulted in a clinically significant reduction in symptoms of alcohol withdrawal within 2 days. However, there is not a consensus regarding which benzodiazepine is the most effective because randomized controlled trials are limited in sample size.[3]

Current European treatment guidelines for the treatment of alcohol withdrawal seizures recommend either diazepam or lorazepam, whereas the use of long-acting benzodiazepines, such as chlordiazepoxide and diazepam, has been suggested to be more efficacious in the prevention of delirium.[3]

Between diazepam and lorazepam, diazepam rapidly redistributes into adipose tissue because of its lipophilicity and can cause oversedation. But intermediate acting agents, such as lorazepam or oxazepam, which yield into inactive

metabolites, may be safer in patients with hepatic dysfunction. [3] Because lorazepam is distributed in tissue less rapidly and less extensively than is diazepam, its ability to control seizures is prolonged and further intravenous lorazepam is associated with a significant reduction in the risk of recurrent seizures related to alcohol.[7]

Lorazepam has a shorter half-life than diazepam. Its half-life is not substantially prolonged in patients with liver or renal dysfunction, and parenteral administration is associated with a predictable pattern of absorption. Lorazepam has minimal depressant effects on respiration and circulation. [7] Overall, it seems lorazepam is a better choice comparatively.

But agents with a rapid onset of action, including diazepam, alprazolam, and lorazepam, have a greater potential for abuse than those with a slower onset of action, such as chlordiazepoxide and oxazepam, and thus might be inappropriate for susceptible individuals. Therefore, the benzodiazepine choice should be individualized on the basis of the characteristics of the drug as well as patient specific parameters [3] and physical co-morbidities.

Several studies have demonstrated that the antiseizure medications carbamezapine and valproic acid are as effective as benzodiazepines for this purpose. [1] Regarding, valproic acid that has been studied in a few small studies, there is limited evidence to support its use over benzodiazepines. Carbamazepine, despite its apparent inability to treat delirium tremens, it appears to be quite effective at preventing AWS. Interestingly, placebo-controlled trials have demonstrated that phenytoin is ineffective for the secondary prevention of alcohol withdrawal seizures. [3, 7]

Benzodiazepines may be administered using a fixed schedule or a symptom-triggered method. A symptom-triggered regimen delivers medication only when a patient is symptomatic (CIWA-Ar 8 or higher) and requires a trained and attentive staff. There is some evidence demonstrating that the use of symptom-triggered regimens, compared with continuous administration, is safe and effective and results in shorter duration of treatment and smaller quantity of medication administered. In addition, it is reported that patients treated with a symptom-triggered lorazepam protocol did not require intubation and mechanical ventilation for over sedation and fewer restraining devices were necessary.[3] Recent recommendations for treatment of AWS suggest a symptom-triggered approach based on frequent objective assessment of the patient. Study by Jaeger, Lohr and Pankratz suggests that, for patients admitted to general medical services who experience alcohol withdrawal, symptom-triggered treatment is associated with a reduced risk of delirium tremens compared with usual care. This reduction in risk was observed as a significantly lower rate of delirium tremens.[4]

The results of treatment of the AWS with diazepam in divided doses may not prove to be effective as this method does not ensure a proper therapeutic concentration of diazepam. Diazepam-loading is an alternative to the existing methods of treatment where diazepam is given orally 20 mg every 1-2 h until the improvement of the clinical condition is achieved. [6]

In our study, symptoms triggered method of intravenous lorazepam was used. Our study showed that the individual doses can vary from patient to patient as shown by the range of lorazepam needed. Among total subjects (N= 34) the mean dose of injection lorazepam used was 247.35 (SD: 269.14) with minimum of 16mgs to maximum of 1286mgs. Such a huge range signifies the importance of the treatment approach that needs to be individualized.

The DeCarolis DD et al study was aimed at comparing the outcomes of treating alcohol withdrawal delirium with a symptom-driven benzodiazepine protocol versus nonprotocol benzodiazepine infusions in the intensive care unit. It was found that the use of a symptom-driven protocol was associated with significantly decreased time to symptom control and in the amount of sedative required. [8]

The mean values for the outcomes in the historical control group (nonprotocol) versus the protocol group were as follows: the cumulative benzodiazepine dose in lorazepam equivalents were 1677 +/- 937 versus 1044 +/- 534 mg (p=0.014) and length of hospital stay 15.3 +/- 8.9 versus 11.2 +/- 3.4 days (p=0.43). [8]

Refractory delirium tremens is a known entity where patient requires high doses of sedation to control their delirious behaviour. It is important for clinicians to be aware that, in refractory cases of delirium tremens, very high dose sedation and mechanical ventilation maybe needed to treat severe withdrawal symptoms. . Propofol can be used to control refractory delirium tremens when the patients are not adequately responding to high doses of benzodiazepines. Wolf and associates reported use of 12424.4 mg diazepam, 121 mg lorazepam, 3050 mg chlordiazepoxide, and 2025 mg midazolam in 8 weeks for treating delirium tremens. Mc Cowan and Marik reported a case series of delirium tremens where patients were refractory to high dose benzodiazepines and were controlled with propofol infusion. [9]

CONCLUSION:

It is generally recommended that symptoms of withdrawal be treated aggressively to prevent further complications and limit any neurologic damage that may occur with AWS.

Benzodiazepines should be administered early to prevent alcohol withdrawal and its related complications. Symptoms triggered regimen is an effective method because patients present with differences in the duration and amount of alcohol use, differences in the severity of presenting symptoms and the amount of benzodiazepine needed to control the symptoms can vary from person to person. Thus, the treatment approach needs to be individualized.

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Original Article

Comparision between the external rotation method and modified Kocher's technique for the reduction of acute anterior dislocation of shoulder

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Key words:
Glenohumeral joints,
Shoulder dislocation,
Modified Kocher's technique,
External rotation method,
Premedication

ABSTRACT

Objectives: To assess the efficacy of the External rotation method in comparison to Modified Kocher`s technique in the reduction of acute anterior shoulder dislocations with or without premedication (Sedation).

Methods: It was a prospective, comparative study between the Modified Kocher's maneuver and the External rotation method for reduction of traumatic acute anterior dislocation of shoulder. There were total 40 patients, who were distributed randomly in to 20 in each group. Procedures were undertaken with or without use of premedication. Statistical analysis was done using SPSS 11.5 and P value <0.05 in Chi-square/student t test was considered significant.

Results: In total 40 patients, 18 (45%) required premedication and 22 (55%) cases did not need it. In External rotation group, 18 (90%) treated without premedication whereas 16 (80%) of Kocher's group required it. It was statistically highly significant as P value was 0.000 on Chi-square test. In total, 35 (87.5%) of dislocated shoulders were reduced successfully. **Conclusion:** The External rotation method for the reduction of an acute anterior dislocation of the shoulder is a safe and reliable method, mainly without requirement of any sedatives or opiate analgesics and it can be performed relatively painlessly in comparison to Modified Kocher's technique which usually needs sedation.

INTRODUCTION

Shoulder (Gleno-humoral) joint is a ball and socket type of synovial joint which has greatest degree of mobility at the cost of stability.[1] It is the commonest of the major joints to dislocate and presents frequently to Departments of Accident and Emergency.[2] The rate of dislocation is 17 per 100,000 population per year, of which the vast majority (97%) are anterior dislocations.

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At present many orthopedists reduce shoulder dislocations either under a general anesthesia or with the aid of parenteral analgesia or sedation. This requires the use of further staff during the procedure and afterwards to observe recovery. Manipulation without sedatives or anesthesia allows rapid patient recovery thus reducing the time the patient spends in the department and freeing medical and nursing staff for other tasks.[3]

The external rotation method is a relatively new technique, which is reported to be safe, comfortable, reliable, easy to perform even in the hands of relatively inexperienced physician

and requires only a single physician, little force, and little sedation.[4] Patients can reduce treatment cost, hospital stay time and avoid adverse effect of sedation or anesthesia as usually sedation is not required.[5] Kocher technique with traction under intravenous sedation was being used commonly in our set up for close reduction. For this patient had to spend long time in an emergency department and had to spend money to busy medicine. More health resources (doctors, nurses, medicines) were required for intravenous sedation and further observation of patient under sedation. Few patient suffered with adverse effects of narcotics and sedation like nausea, vomiting and respiratory compromise.

We had carried out Prospective, randomized comparative study between the traditionally used Modified Kocher's technique and recently described External rotation method with or without use of sedation for reduction of acute anterior dislocation of shoulder and to establish the better method for future use.

METHODS

It was a prospective, comparative study between the Modified Kocher's maneuver and the External rotation method for reduction of traumatic acute anterior dislocation of shoulder. There were total 40 patients, who were distributed randomly in to 20 in each group. Procedures were undertaken with or without use of premedication at Emergency Department and Orthopedic Out Patient Department of Institute of Medicine, Tribhuwan University Teaching Hospital (TUTH), Katmandu, Nepal from July 2006 to June 2008. Statistical analysis was done using SPSS 11.5 and P value <0.05 in Chi-square/student t test was considered significant.

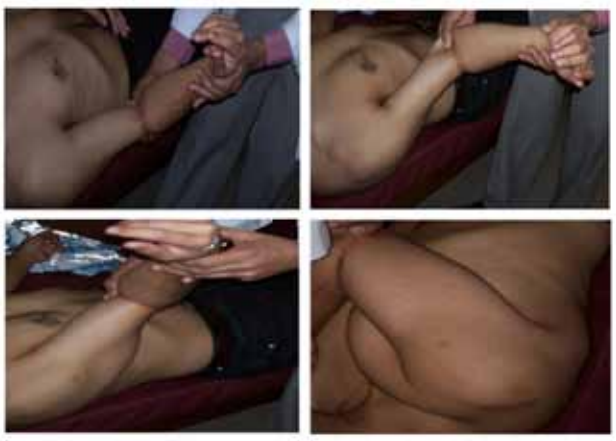
All patients with first episode of acute traumatic anterior dislocation of shoulder and Patients with an associated fracture of the greater tuberosity and/or axillary nerve palsy who were presented with in 24 hours of injury with or without one failed closed reduction method were included in study. Patients with polytrauma, hemodynamic instability, dislocations associated with Neer`s three-part, four-part, or head-splitting proximal humeral fractures or associated with severe glenoid fractures (involving >25%), Patients with open growth plates, with recurrent dislocation and with features of generalized ligamentous laxity were excluded from the studies. Ethical committee approved this study. Written informed consent was taken from every patient included in the study.

Case pro-forma was completed at the time of procedure. Demographic profile of patients along with time required to arrive hospital after the injury, mechanism of injury, dominant side of extremity, side of dislocation, type of dislocation, any associated injury, time required for reduction, type of maneuver used for reduction, need of premedication and pain during reduction maneuver were recorded and analyzed. Randomization was achieved by alternating the patients. Diagnosis was confirmed by clinical examination and radiographic evaluation with use of standard anteroposterior and axillary radiograph. Fracture of greater tuberosity was considered displaced if it was separated>1 centimeter or makes an angle of > 45 degree with the humerus. Whenever premedication was needed pentazocine (0.4 to 0.5 mg/kg) along with diazepam (0.1 to 0.2 mg/kg) was administered through an intravenous cannula five minutes prior to the reduction manoeuver.

The patient was asked to rate the amount of pain during the reduction as none, mild, moderate, or severe, and these ratings were given a score on a four-point scale with one indicating no pain, two for mild pain, three for moderate pain and four for severe pain. Comparison between the two reduction methods was made for the need of premedication, Pain felt by the patient during performance of maneuver and the success rate of achieving reduction. Patients were explained about the reduction maneuver and probabilities of getting pain and availability of premedication for sedation were also explained. They were brought in to full confident and rapport was developed to carry out the procedure. Premedication was used only when patient demanded and clinician thought it was needful to the patient.

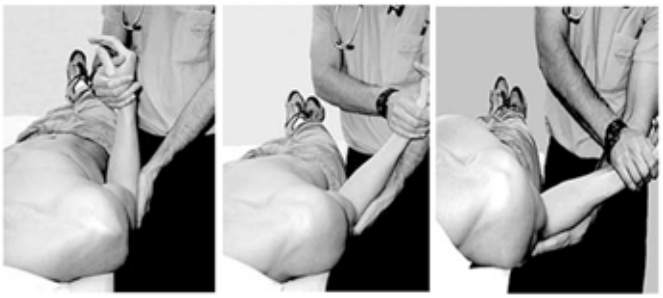
Modified Kocher's Method was performed with the patient lying in the supine position. The treating doctor stood on the side of the affected extremity facing the patient. Gentle, firm, downward, longitudinal traction was applied to the humerus, with the arm slightly away from the patient's side. With the elbow flexed to 90°, the wrist and point of elbow were gently grasped by the physician, and at all times the arm kept pressed (adducted) against the body. The forearm was then brought to full external rotation until resistance was felt (up to 70-85°). The point of the elbow was lifted in the sagittal plane as far as possible, and the arm was adducted across the chest wall, until the elbow approached the midline. The affected hand was then placed on the opposite shoulder (internally rotated).

Figure 1.Modified Kocher's Technique



In External rotation *metho*d reduction steps to be done were taught and demonstrated to the patient. The patient was encouraged to start the reduction step by him or herself if possible. The affected arm was adducted against the chest wall. The elbow was flexed to 90°. The upper arm was externally rotated slowly and gently, using the forearm as a lever by grasping the wrist with one hand and the elbow with the other hand. The rotation was halted transiently when pain was produced and gradually forearm was brought to the coronal plane. Many shoulder reduced when forearm approached to coronal plane and when reduction did not occur then arm was elevated forward about 20 degree and then the humeral head lifted or pressed into the socket so that head was reduced in to glenoid fossa.

Figure 2. External Rotation Method



The basic difference between the two reduction manoeuvre was use of traction in Modified Kocher's technique and no traction in External rotation method. The reduction was confirmed by clinical and radiological examination, and the neurovascular status of the arm was reassessed. The shoulder was placed in a shoulder immobilizer with arm in adducted and internally rotated position.

RESULTS

There were 20 patients in each Modified Kocher's method and External rotation method. Majority of patient belonged to 20-40 years of age group that was 22(55%) cases. There were 29 (72.5%) male and 11 (27.5%) were female. Right side was the dominant hand in 36 (90%) of total 40 patients. Dislocation was more common in right side. There was no significant association between side of dislocation and dominance side of extremities as P value was 0.507 by chi-square test. In total 40 cases, eighteen (45%) cases attended hospital with in one to three hours of injury, eight patients attended early with in one hour, nine patients attended after four to six hours and five patients attended after 7-24 hours of injury. Fall was the commonest mode of injury accounting for 30 (75%) cases of total 40 cases. Sport related injury in six cases(four were during playing Badminton and two were during playing Volleyball), direct blow to the shoulder in two cases and during seizure in other two cases.

The methods commonly used for reduction of an acute anterior dislocation of shoulder are based on either traction, leverage or scapular manipulation. Traction increases muscle spasm and may make reduction difficult, more painful, and less likely to succeed[14]. Mirick et al.[13]and Leidelmeyer[15] recommended use of intravenous sedation in patients who are seen with a dislocation for the first time; however, in our series of external rotation, 16(88.80%) of 18 successful reductions were performed without the use of sedation in patients who had a dislocation for the first time.

This study suggested that though success rate for the External rotation method and the Modified Kocher's technique was almost similar that was respectively 90% and 85%, the external rotation method was more easier, comfortable and does not require premedication. As 18 (90%) cases of External rotation group were treated without premedication whereas 16 (80%) of Modified Kocher's group required premedication. It was statistically highly significant as P value was o.ooo on chi-square test. There was no significant difference in pain score between two treatment groups as P value was 0.218 despite only two cases received premedication in External rotation group whereas 16 cases received it in Modified Kocher's group. The mean time required for reduction in External rotation group was 1.8 min and it was 2.85 min in Kocher's group and P value was 0.000 which had suggested significantly less time was required for reduction in External rotation group.

The lack of short-term complications in our series further confirms the safety of these methods. The external rotation method is a rational, simple, and relatively pain-free method to reduce an acute anterior dislocation of the shoulder. It can be used successfully to reduce both subcoracoid and subglenoid dislocations provided that a displaced greater tuberosity fracture is not present**.** It is essential to gain the patient's confidence by constant reassurance that the procedure is painless in external rotation method and it is the patient who initiates the movements, the surgeon just guides him through the manoeuvre. Patients can go home immediately within a few minutes of the procedure, reducing hospital occupancy and workload on the staff as usually sedation is not required.

Duration of hospital stay and amount of money spent by patient at hospital for treatment by different technique of reduction was not estimated in this study. Similarly total requirement of health resources (manpower) for different technique was not calculated. Small sample size, study for short duration, single centre study are other limitations. These things need to be addressed by further well conducted comparative studies.

CONCLUSION

The External rotation method of reduction of shoulder dislocation is a gentle, relatively painless method, which requires neither

sedation nor anaesthesia whereas Modified Kocher's technique usually required premedication to overcome the traction induced pain. Success rate of Kocher's technique and external rotation method is almost similar. External rotation method can be used as first choice of reduction manoeuvre for patients with acute traumatic anterior shoulder dislocation who presents early to the hospital. Since it is relatively painless technique especially more useful in person with contraindication of sedatives like pregnancy and patient with respiratory disease like bronchial asthma and chronic obstructive pulmonary disease.

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Original Article

LIS for Chronic Anal Fissure has acceptable CCF-FI Scores in GMC-CHRC

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Key words:
Chronic anal fissure, Lateral internal sphincterotomy, Incontinence.

ABSTRACT

Objective: To determine the rate of incontinence after LIS for Chronic Anal Fissure using CCF-FI in CHRC-GMC.

Methods: Two year Prospective longitudinal study leading to sample size of 126 cases. Follow-up period up to 12 weeks. Fecal incontinence severity score measured by CCF-FI scoring system. Inclusion criteria = all Chronic Anal Fissure cases seen in SOPD and posted for LIS (Lateral Internal Sphincterotomy). Exclusion Criteria any other associated condition like hemorrhoids, fistulae etc. Primary outcome measured was fecal incontinence and secondary outcome measures were pain control, healing rate.

Results: The median duration of symptoms was 3months. The commonest symptoms were pain 95.9%, bleeding PR 92.8%, puritis16.32% and constipation 66.32%.The fissure was found in the mid-line posteriorly in 89.8%, midline anteriorly in 8.16% and in both locations in 2.04%. Sentinel piles seen in 69.38%.Post operatively, 1 case develop small perineal hematoma, 2 cases perineal abscess in 2nd follow up, 2cases developed subcutaneous fistula in ano in 4th follow up. 87.75% of fissures healed by 6 weeks, 12.25% healed by 3months. The overall fissure healing rate was 100%.Incontinence of solid feces did not occur in any patient. Over all incontinence rate was 6.12%.

Conclusion: On the basis of our own experience and review of literatures, we believed LIS is very simple, safe, effective procedure for chronic anal fissure treatment. Although there were minimal complications which can be minimize in export surgeon hand.

INTRODUCTION

Chronic anal fissure is a non-healing linear tear in the distal anal mucosa below the dentate line. It is likely to be non-healing if the fissure persists beyond 4 weeks or recurrence . A chronic fissure can be identified by the presence of indurated edges, visible internal sphincter fibers at the base of the fissure, a sentinel polyp at the distal end of the fissure or a fibro epithelial polyp at the apex[11].Most published studies only require the presence of one of these signs or symptoms of chronicity to classify a fissure as chronic[12].A chronic fissure classically occurs at the posterior midline position (6 o'clock position), with the anterior midline position occurring in 10% of females and 1% of males. Fissures occurring at positions other than the 6 o'clock position or the presence of multiple

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fissures may suggest other pathologies like tuberculosis, inflammatory bowel disease, syphilis and immunosuppressive diseases like Human immune deficiency virus[1-3].Anal fissure is the common cause of severe anal pain[4], whichis sometimes so severe that patient may avoid defecation for several days. This leads to hardening of the stool which further tears the anoderm during defecation[4].The cause of anal fissure remains controversial although it has been recognized that anal fissures are, probably,caused by internal anal sphincter hypertonia [5,7,8-10],which produces ischemia of the posterior commissure of the anus. This explains the presence of sphincter spasm,ischemic severe pain, predilection for the posterior midlineand poor healing. It also explains how surgery by disruptingthe internal anal sphincter and improving anodermal bloodflow allows the fissure to heal [5,6,7].The issue of incontinence afterfissure therapy lingers, with some very high rates being reported,which are very dependent on the ascertainment method. Paradoxically patient satisfaction with surgical therapy remains very high. This paradoxicaldisparity is a research issue related to fissure and benignanorectal disease in general.

Since the introduction of LIS by Eisenhammer in 1951,it is the gold standard for the operative management of an anal fissure secondary to hypertonicity or hypertrophy of the internal anal sphincter[13,14,15]. The goal of surgical therapy is to relax the internal anal sphincter, provide symptomatic relief, and heal the fissure.

LIS helps by lowering the resting pressure of the internal anal sphincter, which improves blood supply to the fissure and allow fast healing.[16] The procedure has been shown to be very effective, with 96% of fissures healing at a median of 3 weeks in one trial.[17] It is the preferred method of surgery for persons with chronic anal fissures, and is generally used when medical therapy has failed.[16] It is associated with a lower rate of side effects than older techniques such as posterior internal sphincterotomy and anoplasty,[18] and has also been shown to be superior to topical glyceryltrinitrate (GTN 0.2% ointment) in long term healing of fissures, with no difference in fecal continence.[19]

Although LIS is considered the gold standard therapy of chronic anal fissure. It relieves symptoms with high rate of healing and less long-term recurrence.[20]This optimal therapy has, however, been associated with the development of period of transient postoperative impairment of anal continence up to 30% [19,21]This study aims to evaluate outcome of chronic anal fissures, after lateral internal sphincterotomy.

PATIENTS AND METHODS

Between April 2009 to may 2011 total of 126 consecutive patients with chronic anal fissure any age and sex were enrolled in this study. Full clinical assessment was done, including taking a complete history and general, abdominal,and local anal examination. Inspection of the anal andperianal areas was done for soiling, site, and number of fissures. Per rectal (PR) examination was performedin each case and proctoscopy was performed in selective casesby first author himself to confirm the diagnosis. Chronic anal fissure was diagnosed when symptoms had been present for more than 4 weeks and there were signs of chronicity on examination (indurations, sentinel pile and/or visible sphincter fibers at the base). All operations wereperformed or directly supervised by first author.Postoperative stool softener, 2%xylocaine jelly PR use and Seitz' baths were advised for all patients for 4 weeks to avoid constipation, reduce pain, bleeding, and infection. Patients with anal fissure associated with inflammatorybowel disease, suspicious of malignancy, with previoushistory of anal canal surgery or having a concomitantprocedure like haemorrhoidectomy or laying open of fistula in Ano were not included in this study.

The data recorded included age, sex, duration ofsymptoms, type of symptoms, history of incontinence, siteof fissure, postoperative incontinence scoring and any othercomplications including recurrence, abscess, bleeding. All patients were advised followed up in the OPD at 2weeks, 4weeks, 6weeks and 12 weeks. At each follow-up visit,assessment of fissure healing was done by visual inspectionand by asking about any pain with defecation or any complication. Anotherquestionnaire was filled out for all patients after fissuresurgery had healed, and the fecal incontinence severityscore was assessed. All data were documented. Those patients who were not came in OPD follow up, telephonic follow-up was done. Still 28 patients were lost tofollow up and excluded.The remaining 98 patientswere enrolled in the study.The primary outcome measure was healing of the fissure, definedas its complete re-epithelization. Secondary outcome measures werepain control and anal continence.Fecal incontinenceseverity was assessed according to the validatedCleveland Clinic Incontinence Score because it is practicaland easy to use and interpret: 0 = perfect continence, 1–7 =good continence, 8–14 = moderate incontinence; 15–19 = severe incontinence, and 20 = completely incontinent [22].All patients werefollowed up routinely if they had incontinence to flatus,liquid or solid stool or anal soiling. The degree of incontinence was scored before operation and 3 months (after fissure healing) on a scale of 0-20 according to the Cleveland Clinic Floridafecal incontinence (CCF-FI) scoring system.

Table1: Cleveland Clinic Floridafecal incontinence (CCF-FI) scoring system.

Type of Incontinence	Frequency				
	Never	Rarely	Some-times	Usually	Always
Solid	0	1	2	3	4
Liquid	0	1	2	3	4
Gas	0	1	2	3	4
Wears pad	0	1	2	3	4
Life style alteration	0	1	2	3	4

Never, 0; Rarely, <1/month; Sometimes, <1/week, ≥1/month; Usually, <1/day, ≥1/week; Always, ≥1/day.
0, perfect; 20, complete incontinence.

Results

Total number of patients in this study were 98; male 55(56.12%), female 43(43.88%). Mean age of the patients was 39(16-78) years.The median duration of symptoms was 3months (range 1month to 3 years). The commonest presenting symptoms were pain (94/98, 95.9%), bleeding PR (91/98, 92.8%), purities

(16/98, 16.32%) and constipation (65/98, 66.32%) as shown in Table 2.The fissure was found in the mid-line posteriorly in 88(89.8%) cases, in midline anteriorly in 8(8.16%) patients and in both locations in 2(2.04%) patients. Sentinel piles seen in 68(69.38%).There were no patient reported incontinence on direct questioningpre-operatively. During 2, 4, 6, 12 weeks follow-upclinical details and complications resulting from LIS are shown in Table 2,3Among complication, 1 case develop small perineal hematoma which was manage conservatively, 2 cases found perineal abscess in 2nd follow up which were manage by I&D, 2cases developed subcutaneous fistula in ano in 4th follow up in our study which were manage through fistulectomy. Both patients completely recover without any complication after 3 weeks. 86/98(87.75%) patients in this study hadcompleted healing of fissure by 3rd follow up (6 weeks), 12/98(12.25%) healed by 12 weeks. The overall fissure healing rate in this study was 100%.

Table2 Demographics, clinical and pre-operative data

Age	39 years(16-78)
Sex	
Male	55
Female	43
Total	98
Duration of symptoms	3months(1 month to 3 years)
Symptoms	
Bleeding PR	91(92.8%)
Pain	94(95.9%)
Purities	16(16.32%)
Constipation	65(66.32%)
Site of fissure	
Posterior	88(89.8%)
Anterior	8(8.16%)
Both	2(2.04%)
Sentinel piles	68(69.38%)

Table 3. Complication except incontinence score

	2 weeks	4 weeks	6 weeks	12 weeks
Recurrence	0	0	0	0
Abscess	2	0	0	0
Mild Persistent pain	23	3	1	1
Hematoma	1	0	0	0
Occasional bleeding PR	16	4	0	0
Fistula in ano	0	0	0	2
Total	42	7	1	3

Table 4.Preoperative and post operative Cleveland Clinic Florida faecal

Incontinence scores.

Continence severity	CCF-FI Score	Pre-operative	Post-operative
Perfect	0	98	92
Good	1-7	0	6
Moderate	8-14	0	0
Severe	15-19	0	0
Complete	0	0	0
Total		98	98

Most of the patients in this study were satisfied, except 9 who were only mild satisfied because of low-grade anal incontinence (6 cases) and prolonged postoperative pain caused by hematoma(n=1),abscess (n=2). No recurrent fissures were observed duringfollow-up. Two patients were incontinence of liquid feces with of lack flatuscontrol CCF-FI score were 5,7. Soiling of theirunderclothes due to fecal seepage and lack of flatus control occurred in 4 patients. Their fecal incontinence severity scores were 6. Incontinence of solid feces did not occur inany patient. All of these incontinence patients were female, 4 of them had history of multiple vaginal delivery. Over all incontinence rate was 6.12%.

Discussion

Anal fissures are a common cause of anal pain during, and for 1 to 2 hours after defecation. The cause of anal fissure is not fully understood. Low intake of dietary fiber may be a risk factorfor the development of acute anal fissure. [23]People with anal fissure often have raised restinganal canal pressures with anal spasm, which may give rise to ischemia. [11,24,25] In this point since introduction of sphincter surgery, surgeon practice lots of procedure included are anal stretch, openlateral internal sphincterotomy, closed lateral internal sphincterotomy,posterior midline sphincterotomy, dermal flap coverage ofthe fissure, anterior levatorplasty, pneumatic balloon anal dilation,radio frequency sphincter division, fissurectomy and, as surgicaladjuncts to sphincterotomy, primary surgical wound closure or

excision of anal skin tags (papillae) and reported lots of different results. Not only this, even physician also practice lots of chemical, sphincter relaxing drugs and reported hundreds of articles. At present most of the surgeons convinced LIS is almost gold standard treatment for chronic anal fissures.

Lateral internal sphincterotomy has been associated with ahigh success rate for healing and a low recurrence rate ofchronic anal fissure. Post-sphincterotomy incontinence rate hasbeen variedly reported between 0% and 35% [27, 28]. Pre-existing sphincter injuries, excessive division of internalsphincter, iatrogenic injury to external sphincter, keyholedeformity of anal canal and deterioration in sphincter functionwith ageing

have all been identified as causative factors.[26],

[29,30,15]Deformity of the anal canal has beenresponsible for some of the cases of postoperative incontinence.The keyhole deformity resulting from a posterior midline sphincterotomy is a classical example. Compared to male, females are at a higher risk of incontinence due tothe shorter length of the anal canal and the possibility ofprevious sphincter damage during childbirth [20]. In our study 6 minor incontinence cases encounter, unfortunately all are female and history of multiple vaginal deliveries. In our study fissure healing rate was 100% .no any recurrence noted within 12 weeks but we found early minor complication too, these all are almost same results reported to other articles too. Among complication 2cases developed subcutaneous fistula in ano in our study which were manage through fistulectomy. Both patients completely recover without any complication after 3 weeks, these complications are also known complications which were reported in different articles[13; 19] and recent pub med/ Cochrane Library searches review.

This study also haslimitations. There were certaincategories of patients, which were excluded from the studyas explained in the methods section. This can introduce adegree of selection bias. We do not have a long-termfollow-up data on these patients. Incontinence risk afterLIS is dynamic and tends to increase with passage of timeas sphincter weakness with ageing may also contribute[31]. In this study, incontinence was assessed by the examining doctor in the clinic. The methods used for datacollection can affect the outcomes particularly in incontinencestudies. Anonymous questionnaire are considered tobe more useful than face-to-face direct interviews [32].Patients may be reluctant to report their incontinence duringconsultation either due to embarrassment and shame or in

an attempt to please their doctor [33].We found that female patients were reluctant to be examined by a male doctor due to social and religious norms. During this study we found that most of the patients first visited to homeopaths, traditional healers, minor clinics, pharmacy. They always diagnosed without anal inspection and treat every case of rectal bleeding/ pain as “Hemorrhoids”. Most of the General practitioners andgynecologists also remained unable to diagnose, and differentiate between different peri-anal pathologies.

Conclusion:

On the basis of our own experience and review of literatures, we believed LIS is very simple, safe, effective procedure for chronic anal fissure treatment. Although there were minimal complications which can be minimize in export surgeon hand.

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Original Article

A study on the sensitivity pattern of UTI pathogens in CHRC Pokhara

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Key words:
urinary tract infection,
urinary pathogens,
antibiotic sensitivity testing

ABSTRACT

Hypothesis: There can be observed a certain resistance pattern for UTI pathogens, which can guide practitioners in the empyrical antibiotic choices.

Methods: A retrospective study was carried out at the Central Laboratory of Charak Hospital and Research Center, a tertiary care hospital at Pokhara, Nepal. In the study we have included all urinary samples tested for culture and sensitivity within the period of 1st April 2009 to 31st March 2010. The database included both outpatients and inpatients, from all departments. Urinary isolates were identified by conventional methods. Antibiotic susceptibility testing was performed by Kirby Bauer's disc diffusion method. Urine culture was deemed positive with a pure growth $>10^5$ (single organism).

Results: Of the 1217 tested sample 465 samples showed growth of pathogens among which the most prevalent were E. coli (53.6%) followed by Proteus (16.4%) and Klebsiella spp (12.9%). The majority (57.6%) of the isolates were from female. Susceptibility testing revealed high prevalence of resistance against amoxycillin, cefixime, norfloxacin and nalidixic acid. The most effective antibiotic was found to be amikacin in the UTIs regardless of the causative microorganism. Nitrofurantoin and gentamycin were proven to be equally effective, followed by ofloxacin.

Conclusion: Our data suggest that there is an increasing trend of resistance to first line antibiotics like fluoroquinolones and beta-lactams. This study can be effective tool for clinicians to improve the empirical management of UTI. Every region in Nepal should monitor resistance patterns to urinary pathogens on a regular basis and use antibiotics with a low resistance pattern.

INTRODUCTION

Urinary tract infection (UTI) is the second most common clinical indication for empirical antimicrobial treatment, and urine samples constitute the largest single category of specimens examined in most medical microbiology laboratories [1].

In almost all cases there is a need to start treatment before the final microbiological results are available. Area-specific monitoring studies aimed to gain knowlegde about the type of pathogens responsible for UTIs and their resistance patterns may help clinician to choose the right empirical treatment [2].

Recently several guidelines were published by different organisations regarding the diagnosis and management of UTI [3,4,5,6].

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Regular use of antibiotics is a platform for the emergence of resistant strains. The changing pattern of antimicrobial resistance of the causative microorganisms of UTI is a mounting problem [7].

The aim of this study was to obtain data on susceptibility patterns of major pathogens from both community and hospital aquired UTIs in Pokhara, Nepal.

MATERIALS AND METHODS

In the retrospective analysis we have included all urinary samples from patients attended outpatient clinic or hospitalised (all departments were included) at Charak Hospital and Research Center (CHRC), Pokhara during the period of 1st April 2009 to 31st March 2010. Pokhara is the regional center for the Western Region of Nepal.

Freshly voided midstream specimens of urine were submitted to the Central Laboratory. Semi quantitative urine culture using a calibrated loop was used to inoculate blood agar and MacConkey plates. Significant monomicrobic bacteriuria was defined as culture of a single bacterial species from the urine sample at a concentration of $>10^5$ cfu/ml.

The significant pathogens were identified by standard biochemical procedures [8].

Antibiotic susceptibility testing was performed by Kirby Bauer's disc diffusion method [9,10].

Retrospective data analysis was carried out on all isolates and the antimicrobial potency and spectrum for 10 selected antimicrobial agents of different classes were studied.

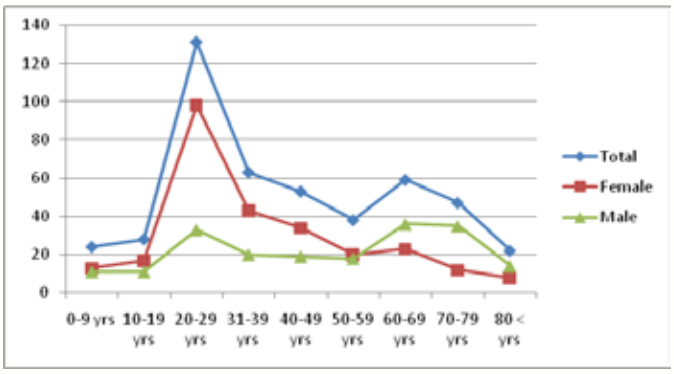
RESULTS

A total number of 1217 urine samples processed during the mentioned period. Among them 465 (38.2%) yielded significant growth of pathogens. The patients were between 1 and 96 years of age. Table 1 and Figure 1 shows the age distribution of all patients with culture positive UTI. The highest incidence was recorded among the age group of 20-29 years, followed by the 30-39 years and the 60-69 years age group. More than half of the patients (53.1%) were between 20-49 years old. Among the patients below the age of 60, the frequency of UTI is higher in women then men, while above the age of 60, the incidence is higher among men. Overall, UTI was found to be more prevalent among females (57.6% vs. 42.4%).

Table 1. **Age distribution**

Age groups (years)	0-9 yrs (N=24)	10-19 yrs (N=28)	20-29 yrs (N=131)	31-39 yrs (N=63)	40-49 yrs (N=53)	50-59 yrs (N=38)	60-69 yrs (N=59)	70-79 yrs (N=47)	80< yrs (N=22)	**Total N=465**
Female	13 (54.2%)	17 (60.7%)	98 (74.8%)	43 (68.3%)	34 (64.2%)	20 (52.6%)	23 (40.0%)	12 (25.5%)	8 (36.4%)	**268 (57.6%)**
Male	11 (45.8%)	11 (39.3%)	33 (25.2%)	20 (31.7%)	19 (35.8%)	18 (47.4%)	36 (60.0%)	35 (74.5%)	14 (63.6%)	**197 (42.4%)**

Figure 1. Age distribution

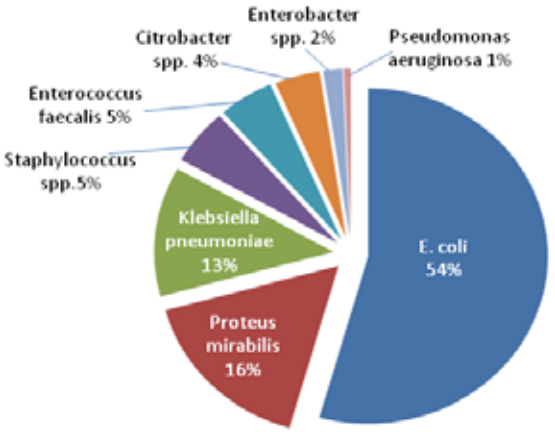


Among the 465 samples with detected microorganisms, E. coli was found to be the most commonly grown pathogen and was confirmed as the causative organism in 54.4% of cases (Table 2). Other more prevalent organisms included Proteus spp. (16.3%) and Klebsiella spp. (12.5%). These 3 microorganisms accounted for 83.2% of the pathogens. While the remaining pathogens contributed with less percentage: eg. Staphylococcus aureus (5.4%), Enterococcus fecalis (4.9%), Citrobacter spp. (4.1%), Enterobacter (1.7%) and Pseudomonas aeruginosa (0.6%).

Table 2. Distribution of causative microorganisms

Organism	Female No.	Male No.	Total No.
E. coli	144	109	253
Proteus mirabilis	40	36	76
Klebsiella pneumoniae	37	21	58
Staphylococcus spp.	16	9	25
Enterococcus faecalis	8	15	23
Citrobacter spp.	17	2	19
Enterobacter spp.	4	4	8
Pseudomonas aeruginosa	2	1	3

Figure 2. Causative organisms



Citrobacter spp. was found much more freqently among women (n=17 vs 2), while the 2 male samples were from the age group of 0-9 years old only (2 yrs and 8 yrs old patients).

Enterococcus faecalis has higher prevalence among male patients (15 vs 8), while all other organisms were detected more frequently among female patients.

The frequency and distribution of the different microorganisms is summarized in Table 2 and Figure 2.

The analysis of results from the urinary pathogens' antibiotic sensitivity patterns revealed high prevalence of resistance to amoxicillin, nalidixic acid, cefixime and norfloxacin.

Among the tested antibiotics, amikacin and gentamycin, followed by nitrofurantion had the highest sensitivitiy rate. The detailed sensitivity pattern is shown in Table 3.

Table 3. Sensitivity pattern of organisms

Organism	Sensitivity				
	Amika	Genta	Cipro	Oflo	Norflo
E. coli (253 cases)	239 (94.5%)	221 (87.4%)	145 (57.3%)	183 (72.3%)	101 (40.0%)
Proteus mirabilis (76 cases)	70 (92.1%)	66 (86.8%)	47 (61.8%)	61 (80.3%)	31 (40.8%)
Klebsiella pneumoniae (58 cases)	51 (87.9%)	50 (86.2%)	40 (67.0%)	47 (81.0%)	26 (44.8%)
Staphylococcus spp. (25 cases)	25 (100%)	23 (92%)	24 (96%)	24 (96%)	12 (48%)
Enterococcus faecalis (23 cases)	22 (95.7%)	17 (73.9%)	15 (65.2%)	19 (82.6%)	11 (47.8%)
Citrobacter spp. (19 cases)	19 (100%)	19 (100%)	17 (89.5%)	17 (89.5%)	14 (73.7%)
Enterobacter spp. (8 cases)	8 (100%)	7 (87.5%)	7 (87.5%)	8 (100%)	5 (62.5%)
P. aeruginosa (3 cases)	3 (100%)	3 (100%)	3 (100%)	3 (100%)	2 (66.7%)
Total (465)	**437 (94.0%)**	**416 (89.5%)**	**298 (64.1%)**	**362 (77.9%)**	**202 (43.4%)**

Organism	Sensitivity				
	Amox	**Cefria**	**Cefix**	**NTF**	**Nalid**
E. coli (253 cases)	83 (32.8%)	128 (50.6%)	93 (36.8%)	233 (92.1%)	61 (24.1%)
Proteus mirabilis (76 cases)	30 (39.5%)	37 (48.7%)	27 (35.5%)	55 (72.4%)	30 (39.5%)
Klebsiella neumoniae (58 cases)	20 (34.5%)	25 (43.1%)	10 (17.2%)	54 (93.1%)	12 (20.7%)
Staphylococcus spp. (25 cases)	16 (64%)	18 (72%)	8 (32%)	21 (84%)	2 (8%)
Enterococcus faecalis (23 cases)	9 (39.1%)	9 (39.1%)	3 (13.0%)	20 (87.0%)	3 (13.0%)
Citrobacter spp. (19 cases)	12 (63.2%)	14 (73.7%)	10 (52.6%)	19 (100%)	7 (36.8%)
Enterobacter spp. (8 cases)	4 (50%)	3 (37.5%)	3 (37.5%)	8 (100%)	4 (50%)
P. aeruginosa (3 cases)	0 (0%)	2 (66.7%)	1 (33.3%)	1 (33.3%)	0 (0%)
Total (465)	174 **(37.4%)**	**236 (50.8%)**	**155 (33.3%)**	**411 (88.4%)**	**119 (25.6%)**

Potency of antibiotics in UTI (regardless of the type of microorganism)

Amikacin	**94.0%**
Gentamycin	**89.5%**
Nitrofurantoin	**88.4%**
Ofloxacin	**77.9%**
Ciprofloxacin	**64.1%**
Ceftriaxone	**50.8%**
Norfloxacin	**43.4%**
Amoxycillin	**37.4%**
Cefixime	**33.3%**
Nalidixic acid	**25.6%**

DISCUSSION

UTI is the second most common infection with which patients visit outpatient clinics. According to guidelines, uncomplicated UTI in female can be treated without microbiological study with the recommended empirical antibiotics and hygienic measures [11].

While in men, it is highly encouraged to perform culture and sensitivity testing. This might be the reason why in our study group among the culture positive samples the female-male ratio is less then expected (57.6% vs. 42.4%), eg. most of female UTI was treated empirically without testing for the microorganisms.

The higher prevalence among young and middle-aged female groups are related to higher occurence of UTI risk factors, eg. sexual activity and pregnancy. While the rise in the elderly population is due to age-related risk factors eg. diabetes and structural abnormalities in men (Benign prostate hypertrophy) [12].

Enterobacteriacae have several factors responsible for their attachment to the uroepithelium. These gram negative aerobic bacteria colonise the urogenital mucosa with adhesin, pili, fimbriae and P1-blood group phenotype receptor [13].

In the present study, the Enterobacteriacae group, namely, E. coli (54.4%), Proteus mirabilis (16.3%), Klebsiella spp (12.5%), and Enterococcus faecalis (4.9%), were the most common pathogens isolated. The isolation rates of urinary pathogens are consistent with reports of the recently-published studies [14,15,16].

While choosing antibiotic for the treatment of UTI one need to consider multiple factors. These are effectivity, toxicity, bioavailability and costs. Identifying the causative microorganism is the most effective way to treat the infection. While in most cases there is a need to start empiric

treatment, especially in urosepsis or in uncomplicated UTI with severe dysuria, when waiting for the microbiological report is not appropriate. In these cases it is useful to have a current knowlegde about the susceptibility pattern of local microorganisms. We have also evaluated the different antibiotics' overall sensitivity irrespective of isolate, which gives a good idea while empirically selecting agents. Amikacin and gentamycin, both belonging to the aminoglycoside group were found to have the highest sensitivity rates (94% and 89.4%), followed by nitrofurantoin (88.4%).

Although aminoglycosides could be most effective, due to their toxicity, they are not recommended as first line therapy in the empirical treatment of UTIs. Their most common adverse effect is nephrotoxicity which presents as renal failure (usualy reversible). Risk factors include older patients, preexisting renal and hepatic disease, volume depletion, traditional Q8h dosing, large doses, concomitant nephrotoxic drug (including vancomycin and IV contrast dyes), and length of therapy. Other occasional but irreversible adverse effects are vestibular toxicity (4-6%) and cochlear toxicity (3-14%). Risk factors include repeated exposure (cumulative dose and duration of therapy), genetic predisposition, renal impairment, elderly, age, bacteremia, hypovolemia, degree of temperature elevation and liver dysfunction [17].

Nitrofurantoin was also found highly effective. It is necessary to note, that nitrofurantoin is recommended for uncomplicated urinary tract infections only, because it does not give good tissue concentration. The toxicity with nitrofurantoin is less, compared to aminoglycosides, has mainly gastrointestinal side effects [18].

Compared to the susceptibility for nitrofurantoin found in our study (88.4% overall sensitivity), other investigators at different locations have found lower sensitivity rate, which can be attributed to more frequent prescription of the drug in other centers and areas, thus giving rise to the selection of resistant strains [19,20,21].

We have found increasing resistance to the commonly used fluoroquinolones (norfloxacin, ciprofloxacin). Fluoroquinolones are preferred as initial agents for empiric therapy of UTI. This is because they have high bacteriological and clinical cure rates, as well as low rates of resistance, among most common uropathogens. They also give excellent urinary concentration [22].

The extensive use of antimicrobial agents have invariably resulted in the development of antibiotic resistance, which, in recent years, has become a major problem worldwide.

CONCLUSION

This study indicates that antibiotics commonly used in UTIs are still effective, but species distribution and their susceptibility to antibiotics can change over time as the prescription patterns are also changing in the primary care.

In the primary care empirical antibiotic prescription should follow the current resistance pattern. It is highly recommended to monitor it regularly and the results should be made available for local health practitioners.

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Original Article

Decontamination of sputum sample for the isolation of mycobacterium tuberculosis.

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Key words:
Mycobacterium tuberculosis, Cetrimide, Oxalic acid and Sulphuric acid

ABSTRACT

Objectives: To assess the efficacy of 1% Cetrimide, 5% Oxalic acid and 4% Sulphuric acid in decontamination of MTB (Myobacterium Tuberculosis)

Methods: A hospital based cross sectional study was conducted from December 2004 to February 2005 and sample sizes were selected as convenience sampling techniques. Out of 365 suspected cases of pulmonary tuberculosis, only smear positive 46 new cases were included.

Result: Cetrimide method of decontamination was found to be best with 91.3% positivity followed by Oxalic acid method (86.9% positivity) and Sulphuric acid method (69.6% positivity

Conclusion: The swab technique proved to be very simple inexpensive technique for decontamination of sputum, not even requiring a centrifuge. The Cetrimide method was the best method of decontamination for the recovery of Mycobacterium tuberculosis from smear positive sputum samples. As far as rate of growth and contamination were concerned it was the best as well.

INTRODUCTION

Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis*. The genus Mycobacterium (Greek Mykes, fungus: bacterium, small rod) has been named so because of the molds like pellicles formed when the member of this genus are grown in liquid medium[1] which are non-motile, nonsporing, weakly gram positive slightly curved and microaerophilic (Wayne and Kubica-1990). Transmission occurs by the air borne spread of infectious droplets. The source of infection is open case of pulmonary tuberculosis and each bout of cough from such a person produces 3,000 thousands of infectious droplets[2]. Tuberculosis is the disease of global interest. One third of the world population is estimated to be infected with Mycobacterium tuberculosis. Four million new cases of tuberculosis were reported annually to the world Health Organization in the late 1990s. Out of these 90% were from the developing countries. However, it is estimated that in 1997, eight millions new cases of tuberculosis occurred world wide,

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of which 95% were from the developing countries of Asia[2].

The resurgence of tuberculosis is mainly due to the advent of HIV and MDR TB (Multi Drug Resistant Tuberculosis). The proportion of cases of HIV1 and Mycobacterium tuberculosis co-infection is on the rise being ten times more in 1997 as compared to 1990s. MDR TB also is being widely reported and the numbers of patients are steadily rising. There are no evidences that the MDR TB is more virulent or more infectious than other form of tuberculosis however, these cases are largely responsible for the spread of disease in the community[3].

Diagnosis of tuberculosis is an important aspect of tuberculosis control. Timely diagnosis ensures proper treatment of patient and therefore prevent further spread of the disease. There are various means by which the disease can be diagnosed but for pulmonary tuberculosis the various diagnostic procedures are Microscopy and culture. Detection of Acid Fast Bacilli (AFB) in stained smear is the first bacteriological evidence of presence of Mycobacteria in the sample. This is less sensitive than culture because it has been estimated that at least 10,000 AFB has to be present in 1ml of sputum sample in ordered to be detected by Microscopy.

The Revised National Tuberculosis Control Programme (RNTCP) in India advocates Microscopic examination of three sputum samples for the diagnosis of tuberculosis [4].

Culture increases the number of tuberculosis cases found, often by 30-50% and also detect the cases that are smear negative. Cultures are helpful for the identification of the isolates and drug susceptibility testing. Culture methods however are expensive and requires expertise[5]. Before attempting to culture, specimens should be treated to kill various non-acid fast organisms by decontamination techniques. Barton RM (1955) swab culture method was found to be more significantly more positive culture. In the year 1955 sputum swab culture technique using 5% Oxalic acid for decontamination was performed by Barton RM. Sikand BK and Ranga Rao (1958) used 2% Cetrimide-pancreatin mixture to decontamination and found 82.7% were positive[7].

Joseph S, Nair NGK and Gangadharan PRJ in 1969 compared the swabs culture technique using 1% Cetrimide, 4% Sulphuric acid and 5% Oxalic acid and found 92%, 88.4% and 93.6% of cultures were positive following decontamination with 1% Cetrimide, 4% Sulphuric acid and 5% Oxalic acid for smear positive cases [8]. Damle A S and Kaundinya D V(1986) found that 92.3%culture positivity following decontamination with 5% Oxalic acid swabs culture technique[9].Mathew S et al (2000) have highlighted the use of swab culture using Cetrimide technique in remotes areas for the drug susceptibility test for the tubercle bacilli [10].

MATERIAL AND METHODS

This study was conducted in the department of microbiology, Central Referal Hospital Gangtok, Sikkim. Early morning sputum samples were collected from the patients attending the Directly Observed Therapy Short (DOTS) Course microscopy centre. Forty six new cases of sputum positive pulmonary tuberculosis were included in the study

Sputum samples were examined to ascertain whether they were salivary, mucosalivery, mucopurulent or blood stained. Smear were made from each samples and stained by the Ziehl-Neelson method. Then were examined under oil immersion lens and graded as scanty, 1+, 2+ or 3+.

All samples were decontaminated using swabs and three different decontaminating agents.

Cotton swabs were made at the end of the broom sticks and sterilized in bulk in hot air oven. Six swabs were used for each sputum samples. Before use, each swab was moistened in sterile distilled water and dipped in the sputum, rotated and then decontaminated by each of the following decontamination methods.

Swabs methods of Joseph, N Nair, NG K and Gangadharan (1969)**:** One percent aqueous solution of Cetrimide was prepared and sterilized in autoclave. Two sterile test tubes were half filled with 1% aqueous solution of Cetrimide and swabs coated with sputum samples were placed in each test tube. After 60 minutes these swabs were drained free of fluids and rolled firmly over the entire surface of two Lowenstein-Jensen medium (LJ) slopes [6].

Swab method of Nassu (Nassu 1954). Two swabs coated with sputum samples were placed in each test tube filled with sterile 5% Oxalic acid and kept for 25 minutes and then transfer to another test tube containing half filled sterile 5% Tri-sodium citrate and kept for 10 minutes. These swabs were drained free of fluids and rolled firmly over the entire surface of two LJ slopes [5].

Swabs methods of Darzins E (1958): Two swabs coated with sputum samples were placed in each test tube filled with sterile 4% Sulphuric acid and kept for 10 minutes and then transfer to another test tubes containing half filled sterile 1% sodium hydroxide and kept for 5 minutes. These swabs were drained free of fluids and rolled firmly over the entire surface of two LJ slopes[5].

All slopes were observed for occurance of growth daily for first week and then at weekly intervals for 8 weeks. Growth of Mycobacteria were graded as 3^+ if confluent, 2^+ if less than 100 colonies, 1^+ if 20 - 100 colonies, actual number if less than 20[13].

The isolates were identified by following tests as Rate of

growth, Pigment production, Colony characteristics, Niacin test, Nitrate Reduction test, Thermos table catalase test [14].

RESULTS

Out of 46 specimens, 42, 40 and 32 yielded a culture positive and 4, 6 and 14 were culture negative though the sputum was positive for AFB following decontamination with Cetrimide, Oxalic acid and Sulphuric acid respectively.

Table 1: Culture Positivity Following Three Methods of Decontamination

Method	Cultural Status		
	Positive (%)	Negative/ Contamination (%)	Total (%)
1% Cetrimide	42(91.30)	4(8.69)	46
5% Oxalic acid	40(86.96)	6(13.04)	46
4% Sulphuric acid	32(69.57)	14(30.43)	46

Out of 42 samples that were culture positive following Cetrimide decontamination, four strains grew after second week, maximum number of strains (47.6%) grew after fourth week and all strains were positive after sixth week of incubation. Following Oxalic acid decontamination, eight strains (20%) grew after third week, maximun number of strains (35%) after fourth week and two strains were culture positive after the seventh week of of incubation. Following Sulphuric acid decontamination, fourteen strains (43.75%) grew after third week and two strains grew after seventh week of incubation.

Table 2: Rate of Growth Following Various Decontamination Methods.

Methods	No of Strains Showing Growth After								Total
Week	1st	2nd	3rd	4th	5th	6th	7th	8th	
Cetrimide	0	4(9.52)	12(28.57)	20(47.6)	4(9.52)	2(4.76)	0	0	42
Oxalic acid	0	0	8(20.)	14(35)	10(25)	6(15)	2(5)	0	40
Sulphuric acid	0	0	14(43.75)	8(25)	0	8(25)	2(6.25)	0	32

The contamination rate was minimun with Cetrimide method. Out of 46 no contamination was seen in 73.9% of culture following cetrimide . For oxalic acid and Sulphuric acid method 43.48% did not show any contamination. One slope contamination was seen in 17.4%, 43.48% and 26.1% of cultures following decontamination with Cetrimide, Oxalic acid and Sulphuric acid respectively. Rate of double slope contamination were 8.7%, 13.04% and 21.7% following decontamination with Cetrimide, Oxalic acid and Sulphuric acid respectiveley.

Table 3: Rate of Contamination Following the Three Decontamination Methods.

No.of L-J Slopes Contaminate	No of Samples Showing Contamination		
	Cetrimide (%)	Oxalic acid (%)	Sulphuric acid (%)
0	34(73.9%)	20(43.48%)	20(43.48%)
1	8(17.4%)	20(43.48%)	12(26.09%)
2	4(8.7%)	6(13.04%)	10(21.73%)

All the 46 strains that grew in L-J medium, were slow growing and non-chromogenic showing rough and buff colored colonies. All colonies were Niacin positive, Nitrate reduction test positive and Thermostable catalase test negative.

DISCUSSION

Sputum samples found to be positive for AFB on microscopic examination were subjectd to three different decontamination technique viz Cetrimide, Oxalic acid and Sulphur acid swabs methods before being cultured on L-J medium slopes. It was found cetrimide method gave best result with 91.3% positivity followed by 86.9% and 69.6% positivity with Oxalic acid and Sulphuric acid respectively. Joseph S et al (1969) found the rate of culture positivity with smear positivity samples to be 92% following Cetrimide swabs method of decontamination. This finding is similar with that of the present study. In the same study they have found 88.4% of culture to be positive following Oxalic acid and Sulphuric acid swabs culture method of decontamination but in the present study only 86.9% and 69.6% of culture were positive after decontamination by these two methods. Using Oxalic acid swab culture method Damle AS and Kaundinya D V (1986) reported a culture positivity of 92.3% as compared to that of Petroff's method which yielded 80.7% of positivity cultures and NALC-NaOH which yielded only 78.8% of positive cultures[9].

When the rate of growth was concern a few strains (4 nos) grew early after second week of incubation by Cetrimide decontamination. The rate of growth was the best with Cetrimide with 85.7% of strains grew after fifth week of incubation where as with oxalic acid and Sulphuric acid decontamionation only 55.00% and 68.8% of strains respectively grew within five week of incubation. Similar findings were reported by Joseph S et al (1969) who found the rate of growth of Mycobacterium tuberculosis to be faster with the cetrimide method as compared to oxalic acid and sulphuric acid[8].

As contamination was concern there was lesser degree of contamination, both single slope and double slope by cetrimide swab method. In this study 17.4% showed single slope contamination and 8.7% showed double slope contamination following cetrimide decontamination. The rate of single slope

contamination was highest with Oxalic acid (43.5%) followed by Sulphuric acid (34.8%) and lest with cetrimide (17.4%). Single slope contamination reported by Joseph et al (1969) were however, much less than present study being only 11.6% for oxalic acid and sulphuric acid and 10.4% for Cetrimide method for smear positive sputum samples[8].

Rate of double slope contamination in the present study were 21.7%, 13.0% and 8.7% with sulphuric acid, Oxalic acid and Cetrimide methods respectively. Double slope contamiantion were also much lower in the study conducted by Joseph et al (1969) being only 4.8%,3.2% and 2.4% by Sulphuric acid, Oxalic acid and cetrrimide decontamination methods[8]. Double slope contamination indicates the failure of decontaminating agents with cetrimide our study as compare to other two methods. This might be due to the fact that the cheminal involved with Cetrimide involves only a single step manipulation where as both the Oxalic acid and Sulphuric acid involves two step in decontamination process.

CONCLUSION

The swab technique proved to be simple and inexpensive technique for decontamination of sputum samples, not even requiring centrifuge. The Centrimide method was the best method of decontamination for the recovery of *Mycobacterium tuberculosis* from smear positive sputum samples. This method was found to be the best as far as the rate of growth and contamination were concerned. The swab technique using 1% cetrimide for decontamination can be used as an alternative method for processing sputum samples for recovery of Mycobacteria species. The usefulness of this method for smear negative samples however, need to be assessed.

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Original Article

A study of effect of lifestyle change on coronary risk factors

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Key words:
Yogic lifestyle; IHD; Coronary risk factors; Lipoprotein; Intervention.

ABSTRACT

Introduction: Risk factors consistently associated with ischemic heart disease (IHD) include physical inactivity, diabetes mellitus, stress, and hypertension, smoking and high fat diet.

Objectives: The present study was undertaken to evaluate the effect of a comprehensive lifestyle change on coronary risk group in a randomized single blind trial.

Methods: Anthropometric measurement, lipid profile, heart rate and blood pressure were recorded at the baseline and at the eight weeks of intervention of Yogic lifestyle.

Results: At the end of the study, there was a significant reduction in body weight, Body Mass Index(BMI),Waist circumference, hip-circumference, Mid-arm circumference, Waist-Hip ratio, Sub-scapular skin fold thickness, triceps skin fold thickness($P<0.01$). A significant decline in serum cholesterol level ($P<0.05$) and a non-significant improvement in resting heart rate and blood pressure were also found.

Conclusion: From this study, it can be concluded that coronary risk factors are subject of modification with lifestyle change program.

INTRODUCTION

Rapid socio-economic development aggravates several coronary risk factors such as stress, physical inactivity, high fat diet, alcohol consumption and smoking (Kannel 1983, Patel 1985) into the life of a large section of population. Early detection and management of coronary risk factors are necessary to prevent the further progress into established IHD. In this context, Yoga offers time tested, culturally acceptable and inexpensive alternative lifestyle including exercise, dietary changes and mental relaxation (Ornish et al, 1990).

Most of the previous studies have not evaluated an integrated package of lifestyle changes, but only isolated interventions affecting only one part of lifestyle. The main objective of this study was to evaluate the effect of lifestyle change along the line of "Yogic discipline" on coronary risk factors.

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MATERIALS AND METHODS

Nine male volunteers aged 46-60 years (mean 56.6±4.39) were recruited from cardiology and medical O.P.Ds. of All India Institute of Medical Sciences (A.I.I.M.S.), New Delhi. Ethical clearance was obtained from Ethic Committee of A.I.I.M.S. and volunteers signed informed consent form. Entry criteria for the subjects included presence of one or more coronary risk factors like established hypertension, diabetes, hypercholesterolemia, obesity (BMI>25.0 kg/m^2) without history and evidence of IHD on clinical examination and 12-lead Electrocardiogram recordings. Their weight, height, BMI, waist circumference, hip circumference, waist-hip ratio, sub-scapular skin folds thickness and triceps-skin fold thickness were recorded. Total serum cholesterol and serum triglycerides were measured using analysis kits (Random Lab, U.K. & Ranbaxy Diagnostics, New Delhi) and an auto-analyzer (Beckman Clinical System 700; Caif.). Very Low density Lipoprotein Cholesterol (VLDL) was determined by the precipitation procedure of Wilson and Spiger. High density Lipoprotein cholesterol (HDL) and Low density Lipoprotein (LDL) were estimated by the method of Burstein et al and difference [LDL= Total cholesterol-(HDL+VLDL)] respectively. Heart rate and blood pressure were recorded by using palpatory and mercury sphygmomanometer methods respectively. All parameters studied were recorded in the beginning and at the end (8 weeks) of the intervention. Subjects were advised to change the dietary habits in the form of vegetarianism, low fat intake, increased dietary fiber consumption and to engage themselves in regular physical exercises every day, at least for 30 minutes in form of walking, jogging and cycling.

They were also instructed to avoid smoking and alcohol consumption. Four day Yoga camp was conducted at Adhyatma Sadhana Kendra, Mehrauli; New Delhi, where subjects were trained to perform Asanas (postural movements) like Padmasana, Yogamudra, Ardhamatsyendrasana, Paschimottasana, Sarvangasana, Halasana, Matsyasana, Tadasana, Bhujangasana, Dhanushbanasana and Pranayama (breathing exercises). Anuvrata, Anupreksha and Preksha meditation were the parts of stress management methods. Participants were encouraged to continue the practice of Yoga subsequently at home for 30-40 minutes every day. They were advised to maintain a diary about their dietary habits and physical activities and visit Adhyatma Sadhana Kendra every 15 days for re-evaluation and reinforcement of the different steps of lifestyle change programme.

Statistical analysis of data was performed using the Wilcoxon Rank-sum Test of mean of individual changes for each parameter. The result was considered statistically significant, if $P < 0.05$.

RESULTS

The mean body weight and BMI were 67.9 ±10.2 kg and 24.7 ±3.9 kg /m^2 respectively. After 8 weeks of intervention, the mean body weight was 65.5 ±10.3 kg and the mean BMI was 23.8 ±3.9 kg/m^2. A significant reduction ($P < 0.01$) in both parameters was found. The mean waist circumference, hip circumference, waist-hip ratio, mid-arm circumference, sub-scapular skin fold thickness and triceps skin fold thickness were 94.6 ±0.5 cm, 97.6 ±3.8 cm, 0.96 ±0.09, 29.7 ±1.8 cm, 19.6 ±8.1 mm and 20.2 ±8.2 mm respectively at the baseline. Similarly a significant reduction in waist circumference, hip circumference, waist-hip ratio, mid-arm circumference, sub-scapular skin-fold thickness and triceps skin-fold thickness ($P < 0.01$) was found at the end of the study (Table-1).

Table-1: Anthropometric parameters of subjects

Parameters	Pre-intervention (Mean± SD)	Post-intervention (Mean± SD)	P-value
Waist circumference (cm)	94.6 ± 10.5	90.1 ±7.7	P < 0.01
Hip circumference (cm)	97.6 ± 3.8	95.6 ± 4.6	P < 0.01
Mid arm circumference (cm)	29.7 ± 1.8	27.8 ± 1.8	P < 0.01
Waist-Hip Ratio	0.96 ± 0.09	0.93 ± 0.08	P < 0.01
Sub-scapular skin-fold thickness (mm)	19.6 ± 8.1	18.0 ± 8.4	P < 0.01
Triceps skin-fold thickness (mm)	20.2 ± 8.2	15.5 ± 6.9	P < 0.01

The mean total serum cholesterol was 228.9 ±73.1 mg/dl at the baseline and after intervention; it was reduced up to 220.4 ±70.3 mg /dl. The decline in serum cholesterol was statistically significant ($P<0.05$). The mean serum triglyceride, HDL, LDL and VLDL were 193.7 ±110.1mg/dl, 59.1±21.1 mg/dl, 122.1±56.6 mg/dl and 47.5±22.9 mg/dl respectively at the baseline. There were non-significant reduction in serum triglyceride, LDL and VLDL-cholesterol levels. HDL-cholesterol level remained unchanged (Table-2).

Table-2: Lipid profile of subjects

Parameters	Pre-intervention (Mean± SD)	Post-intervention (Mean± SD)	P-value
Total serum cholesterol(mg/dl)	228.9 ± 21.1	220.4 ±70.3	P< 0.05
HDL-cholesterol (mg/dl)	59.1 ± 21.1	58.9 ± 22.9	NS
LDL-cholesterol (mg/dl)	122.1± 56.6	118.5 ± 56.2	NS
VLDL-cholesterol (mg/dl)	47.5 ± 22.9	48.2 ± 23.7	NS
Triglycerides(mg/dl)	193.7 ± 110.1	185.9±78.7	NS

The mean resting heart rate (HR), systolic blood pressure and diastolic blood pressure were 79.6 . ±17.0/minute, 132.3±14.7 mmHg and 83.6.±7.5 mmHg respectively at the baseline. After 8 weeks of intervention, HR was 74.0 ±13.3 / min, systolic blood pressure was 132.2.±6.1 mmHg and diastolic blood pressure was 83.3±13.3 mmHg. Resting heart rate and diastolic blood pressure did show a tendency towards reduction. But it was statistically non-significant.

Fig.1: Pre and post intervention sub-scapular skin fold thickness

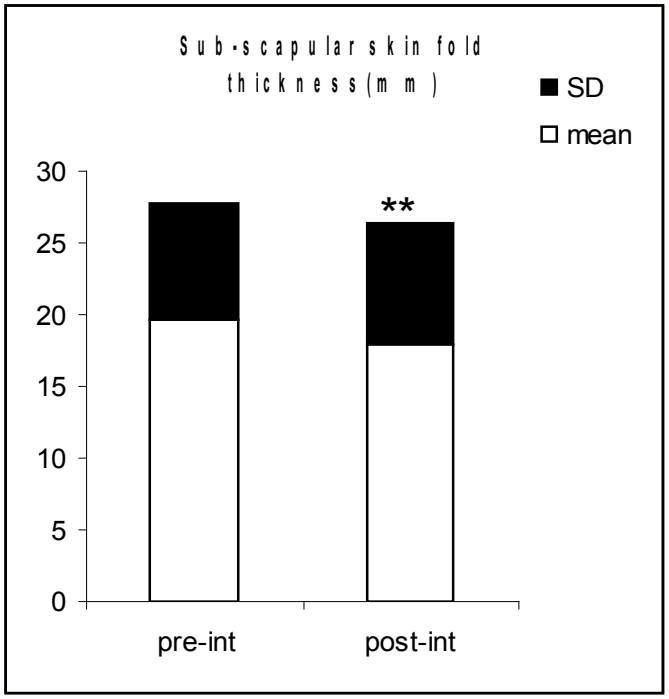


Fig.2: Pre and post intervention triceps skin fold thickness

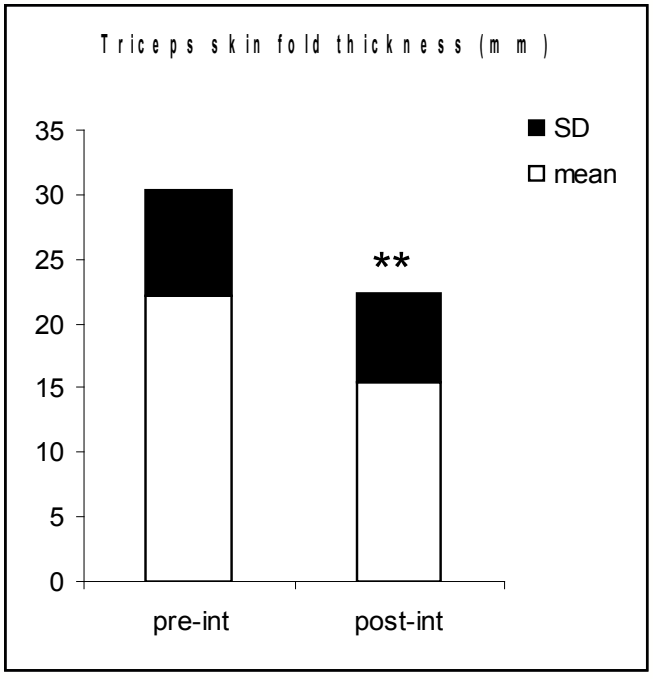


Fig.3: Pre and post intervention waist-hip ratio

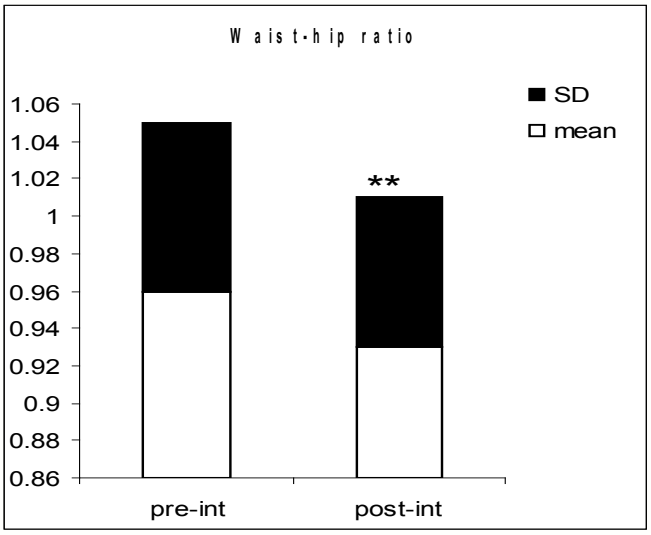


Fig.4: Pre and post intervention mid arm circumference

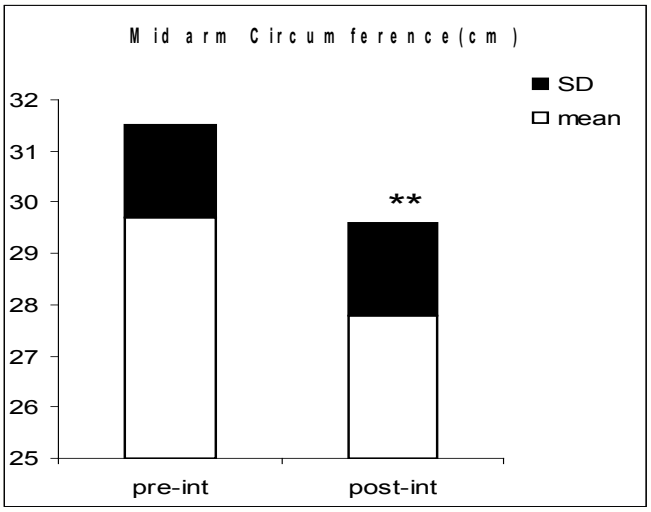


Fig.5: Pre and post intervention hip circumference

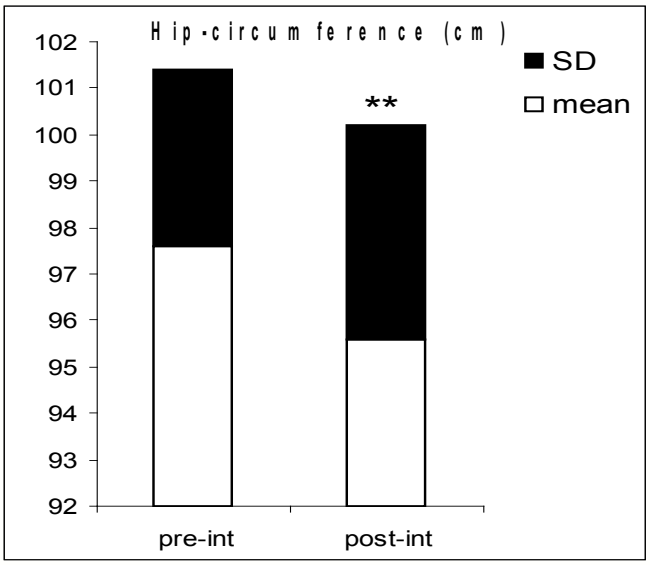


Fig.6: Pre and post intervention waist circumference

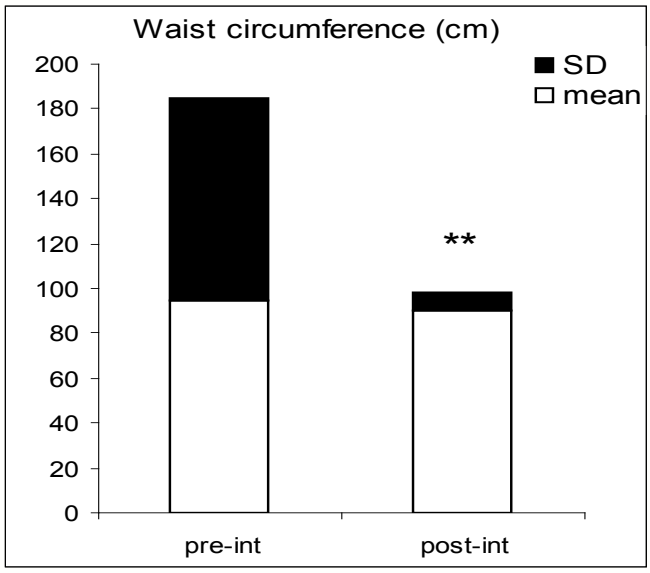
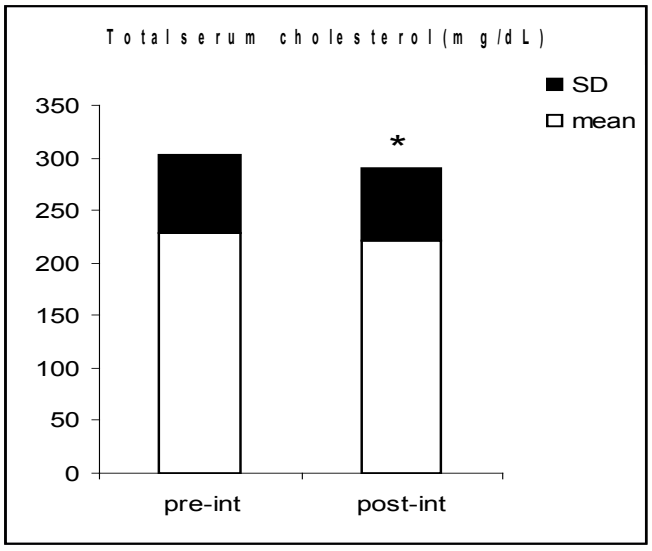


Fig.7: Pre and post intervention total serum cholesterol.



DISCUSSION

The exact pathogenesis of ischemic heart disease is not known. But there are several coronary risk factors. The main purpose of this study was to evaluate the effect of lifestyle change along the line of " Yogic discipline " on some risk factors like obesity, hypertension and hypercholesterolemia.

A significant reduction in body weight and BMI in this study may be due to increase in physical activity and decreased fat intake. The increased body weight and fat intake have an adverse effect on maintenance and persistence of heart disease, high blood pressure and diabetes (Steptoe and Warde, 1994). Reduction in body weight and BMI is an encouraging result to show that this helps in decreasing the threat for further worsening of the coronary risk score. Yogic lifestyle can be advocated as anti-obesity programme for weight management.

All skin fold thickness and circumference measured in this study showed a significant decline in their values, after intervention. Such findings have been supported by the previous investigators on Yoga meditation programme (Bera and Rajapurkar, 1993). A decrease in hip-waist ratio could be due to increased adipose tissue mobilization, and/or reduced fat intake.

We found that there was a significant decrease in total serum cholesterol level at the end of the study. Similar change was observed by Gleichman et al in 1989 during a lifestyle change programme in patients with mild to moderate hypertension. This change may be associated with consumption of low fat diet, use of dietary fibers which is believed to reduce the absorption of cholesterol from gastrointestinal tract. The change in HDL, LDL and VLDL-cholesterol were non- significant Yeater et al observed similar results in 1990. It could be due to the short period of intervention programme and these lipoproteins may need longer duration of intervention for substantial change to take place. But Naughton has shown a significant decrease in serum triglyceride level in 1992, when the duration of the programme was comparatively longer.

We found a non-significant decrease in resting heart rate and diastolic blood pressure. Whereas, systolic blood pressure did not change much. But several other studies have shown statistically significant reduction in HR and blood pressure, when the subjects practiced Yoga for longer duration (Telles et al1993, Rosolova et al 1991 and Glassgow et al 1982). A decrease in resting heart rate and blood pressure has been proposed to occur due ro lower sympathetic vasomotor tone (Gopal et al 1973). " Yogasanas" have been proposed to increase the venous return to the heart and thereby increasing the preload and an increase in stroke volume, without change in heart rate.

A comprehensive lifestyle change along the line of "Yogic discipline" does bring about reduction in coronary risk factors like obesity, hypercholesterolemia and hypertension. Further investigations with long term intervention programme and with greater number of subjects should be conducted for further evaluation and consolidation of results, found in this study.

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Original Article

A cross sectional study of assessment of relevance and effectiveness of CHW development system

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Key words:
Yogic lifestyle; IHD; Coronary risk factors; Lipoprotein; Intervention.

ABSTRACT

Background: Community Health Workforce development has a rich history in South East Asian Region (SEAR). The first Community Health Unit was established in Sri Lanka in 1926 and then practiced over many of the regional countries like, Thailand, Mayanmar and India. In 1978 after the formal Alma Ata Declaration all most all the member countries are practicing many of the elements of the Primary health care (PHC).

Introduction: Community Health Workers were in the fore front workforce to bring about change through community health programmes to national levels. In Bangladesh also, there are different categories of health workforce serving in the health care delivery system.

Main objectives : To assess relevance and effectiveness of community health workforce (CHW) development system in Bangladesh.

Methods : This descriptive type of cross sectional study was conducted adopting purposive sampling technique. Study population were directors, administrators, principals, teachers of different institutes/ organizations, community health workers working in different corners of Bangladesh. Study places were Dhaka, Sylhet, Jokigong, Sunamgong, Moulovibazar, Chittagong, Bogora, Rangpur, Sirajgonj, Mymensingh, Comilla, Noakhali, Jhenaidah, Pabna, Gazipur, Rajbari. Developed questionnaire & checklist were used for the collection of data from the institutes/ organizations by data collectors. Data was also collected sending questionnaire & checklist and getting back those by currier service after telephonic communication. The data were edited, processed and was analysed by using SPSS soft ware and also few parts manually. No strong ethical issues were involved in this activity. Prior permission was taken from the concerned authority. Confidentiality and anonymity were assured and maintained.

Results : Study revealed that all the respondents (100%) are in favour of production of CHW in Bangladesh (Part-1: Table -1) through formal academic institutional or pre service education (61.4%) (Table-2). Most of the respondents (56.8%) viewed that there are scopes of utilisation of produced CHW in rural areas and most of the respondents (63.6%) also viewed that terminal/marginalized/underprivileged peoples of hard to reach areas at least can be served by CHW(Table-3). Regarding the competency of produced CHW few of the respondents (43.2%) viewed positively (Table-3). Most of the respondents (86.4%) viewed that both govt. & non govt. sectors should produce CHW with a very good co-ordination and co-operation (Table -4). Study revealed the institutional capacities or situations about physical facilities, ongoing course, audiovisual aids, library, manpower and assessment procedure (Result Part B, Table 1-6). Time constraint was a major factor due to PRL of previous DD (MA) or Programme manager to start and complete this activity. **Conclusion:** Study revealed that there is strong & logical relevance for the production of CHW in Bangladesh. So the existing Human Resource for Health (HRH) policy is to be revised & revisited as a time felt need to develop more competent CHW for Bangladesh to serve the marginalized, terminal, people of remote, rural & hard to reach areas.

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INTRODUCTION:

Community health workers (CHW) are lay members of communities who work either for pay or as volunteers in association with the local health care system in both urban and rural environments. They have been identified as community health advisors, lay health advocates, promoters, outreach educators, peer health promoters, peer health educators and community health representatives. CHWs offer interpretation and translation services, provide culturally appropriate health education and information, assist people in receiving the care they need, give informal counseling and guidance on health behaviors, advocate for individual and community health needs, and provide some direct services such as first aid and blood pressure screening. They are community members who serve as frontline health care professionals. Generally they work with the underserved and are indigenous to the community and play a pivotal role in meeting the health care needs of frontier communities.

They help increase access to health services, improve quality of care, reduce health care costs, and contribute to broader social and community development[1].

As "in-between people," CHWs "draw on their insider status and understanding to act as culture and language brokers between their own community and systems of care[2].

CHWs may be paid or unpaid/volunteer, and have varying levels of job-related education and/or training. According to the National Rural Health Association, "the most significant commonalities of CHW programs are that:

- they are focused on reaching hard-to-reach populations;
- the workers usually are indigenous to the target population;
- their expertise is in knowing their communities rather than formal education" [3].

Community Health Workforce development has a rich history in South East Asian Region (SEAR). In 1926 the first Community Health Unit was established in Kalutara, a small district in Sri Lanka. Since then many of the regional countries like, Thailand, Mayanmar, India etc practiced different types of community based health workforce depending on the unique country requirements. In 1978 after the formal Alma Ata Declaration all most all the member countries are practicing many of the elements of the Primary health care (PHC). It has been 31 years, since the Alma Ata Declaration on Health for All through PHC. Community Health Workers were in the fore front workforce to bring about change through community health programmes to national levels.

Despite the importance of CHWs, the challenges of providing them with high-quality training opportunities can be problematic. In an issue paper on community health advisors, the National Rural Health Association (NRHA) states, "training of CHAs is variable in terms of quality and content" and considers it to be a major challenge to community health advisor programs[4] .

Justification:

In Bangladesh there are different categories of health workforce serving in the health care delivery system named FWA, FWV, HA, SBA etc. But there are less formal academic institutes from where such types of different health workforces are produced. Within the last 3 years govt. approved 14 institutes to produce CHW through one year certificate course who will mainly serve in the non govt. sectors.

Most of the CHW get training after recruitment. The process of production of CHW is not effective, and as well as not need based and also not institutionalized. So it is very time felt need to assess the relevance and effectiveness of CHW development system in Bangladesh. In our context, effectiveness means "doing the right thing" and relevance refers to the pertinence, or applicablility of the activity of health workforce to the community.

General Objectives:

To assess the relevance and effectiveness of community health workforce development system in Bangladesh.

Specific Objectives:

To identify the present status and to assess the strengths, weaknesses, opportunities & threats of community health workforce development system in Bangladesh in terms of infrastructures, logistics, teaching facilities and manpower for production

of community health workforce.

Methodology:

The study was a descriptive type of cross sectional study that took place in different districts of Bangladesh. Participants were the directors, administrators, principals and teachers of different institutes, /organizations and also Community health Workers for the period of 6 months (1st November 2010-30th April 2011).

Available documents on CHW production & organization in govt. and non govt. sectors of Bangladesh were studied.

Purposive sampling was done and questionnaire & checklist for data collection were developed

after literature review followed by consultation with the concerned persons and subject specialists.

Pre-testing of the questionnaire & checklist were done outside the study area. According

to the feed back of the pre testing, corrections were made in the tools. Questionnaire & checklist were used for the collection of informations from the institutes/ organizations. Data was also collected sending questionnaire & checklist and getting back those by currier service after telephonic communication.

The data were then edited, processed and was analysed by using SPSS soft ware and also few part manually.

Regarding ethical issues, prior permission was taken from the concerned authority. Confidentiality and anonymity were assured and maintained.

Results : Part –A (Through Questionnaire)

Table – 1 : Distribution of the respondent by their opinion whether they think production of Community Health Workforce (CHW) is essential for Bangladesh

Opinion of the respondent about production of Community Health Workforce (CHW) HW is essential for Bangladesh	Frequency	
	Yes (%)	No (%)
	44 (100)	0

Study revealed that all the respondents (100%) are in favour of production of CHW in Bangladesh.

Table – 2 : Distribution of the respondent by their opinion regarding the time when they feel for training to produce CHW. n= 25

Opinion regarding the time when training to be imparted to produce CHW.	**Frequency**	**Percent (%)**
Pre service education (Before job through formal academic institutes)	35	61.4
In service training (Just after recruitment)	14	24.6
In service training (Within job/ during service time)	9	15.5

Table 2 shows the opinion regarding the time when the respondents feel for training to produce CHW through formal academic institutional or pre service education (61.4%) .

- *Responses are more than 100% due to multiple response.*

Table –3: Distribution of the respondent by their opinion regarding different events for production of CHW in Bangladesh

Opinion regarding different events for production of CHW in Bangladesh	**Different levels of opinion**					
	Strongly agree (SA)	***Agree (A)***	***Undecided (U)***	***Disagree (D)***	***Strongly disagree (SD)***	**Total**
After recruitment of certain group of people for job as CHW training for them on different issues as before is sufficient for production of CHW in Bangladesh	14 (31.8%)	12 (27.3%)	6 (13.6%)	9 (20.5%)	3 (6.8%)	44
The system/process of production of CHW through Institutes of CHW is all right.	16 (36.4%)	14 (31.8%)	1 (2.3%)	10 (22.7%)	3 (6.8%)	44
Scope of organization of CHW in Bangladesh is enough specially in rural areas.	25 (56.8%)	7 (15.9%)	7 (15.9%)	2 (4.5%)	3 (6.8%)	44
Terminal/marginalized d/ underprivileged/peoples of hard to reach areas at least can be served by CHW can be served by CHW	28 (63.6%)	16 (36.4%)	-	-	-	44
Produced Community Health Workforces (CHW) in this country are competent enough to serve the targeted community.	7 (15.9%)	19 (43.2%)	5 (11.4%)	10 (22.7%)	3 (6.8%)	44

Table 3 shows that most of the respondents (56.8%) viewed that there are scopes of utilisation of produced CHW in rural areas and most of the respondents (63.6%) also viewed that terminal/marginalized/underprivileged/peoples of hard to reach areas at least can be served by CHW. Few of the respondents (43.2%) viewed positively about the competency of produced CHW.

Table –4: Distribution of the respondent by their opinion regarding sector which can produce CHW.

Opinion regarding sector which can produce CHW.	Different levels of opinion			
	Govt. sector	Non govt. sector	Both govt. & non govt. sector	Total
	5(11.4%)	1(2.3%)	38(86.4%)	44

Table –4. Most of the respondents (86.4%) viewed that both govt. & non govt. sectors should produce CHW with a very good co-ordination and co-operation.

100 in all 16 institutes. Course duration is between 1-3 years, with permission and affiliation from DGHS/ MOH & FW.

Majority of the institutes had minimum teaching aids, such as- computer, multimedia, over head projector, slide projector, film

Table –5: SWOT Analysis in regards to the production of CHW in Bangladesh

Strengths	Weaknesses	Opportunities	Threats
1. Available personnel as trainees & trainers. 2. Enough Facilities are available in both sectors. 3. MATS can also run CHW programmes. 4. There are enough target population. 5. Health infrastructures for CHW already exists at community clinics and in NGOs. 6. There are 20 govt. approved institutes and 12 applied for permission. 5. One year course for CHW is running at different institutes under DGHS & SMF . 6. Heath facilities are up to grass root level where CHW can work. 7. Existing good GO-NGO collaboration. 8. Commitment of Govt. to provide health care services will help government to increase & improve health indictors. 9. At present about 905 personnel can be trained yearly by 20 training institute. 10. Having enough manpower to be trained and also to run the CHW course.	1. Lack of manpower & instruments. 2. Lack of co-ordination among institutes, DGHS & DGFP. 3. Attitude of business rather than academic & or social welfare. 4. No standard uniform course curriculum. 5. Poor teaching-learning or training. 6. Services for target population are not well defined. 7. Job descriptions for CHW is not nationally established and uniform . 8. Less number of institutions, no definite guidelines. 9. Lack of good planning of production & utilization of CHW. 10. Less institutes for production of CHW as per demand. 11. No job guarantee for CHW.	1. There is a developed curriculum by SMF. 2. The program can be coordinated easily by SMF, there are job opportunities, particularly in community clinics and urban slums. 3. Opportunities for self employment are there. 4. Need more production CHW in Bangladesh. 5. Existing institutes and infrastructures present. 6. The CHW producing training is institution based following uniform course curriculum of 1 year. 7. Literacy rate is increasing & a lot of educated both male & female are coming forward to join this CHW course. 8. Good GO-NGO collaboration. 9. In many organizations man power can be utilized to train as CHW among rural population. 10. Lots of scopes of primary health care, essential service packages & family planning services by CHW. 11. Having enough educated manpower for training .	1. Heterogeneous way of production of CHW. 2. Ongoing different programs will deteriorate the quality of services of CHW. 3. If job opportunities are not ensured, future unrest may result . 4. No standard uniform curriculum. 5. Reduced quality of produced CHW. 6. Conflict of interest will be raised between old staff & new staff by designation . 7. Problems of quality also in non govt. sectors . 8. No structured guidelines, no job assurance, no future planning . 9. Selection/ Recruitment variation of CHW. 10. Institutional capacity development is not properly done. 11. Non co-operation from concerned authority & lack of positive attitude for establishment of the centre. 12. If quality is not controlled & government organization not involved in admission procedure, the programme will fail and people will not get good services.

Table –5 shows , Distribution of Physical Facilities as per institutes shows that in half of the cases, the building is owned by the institutes, Total space of the Institute ranges from, 2000 to 6000 sq. feet mostly. Most of the institutes had class rooms, tutorial rooms, conference room, auditorium, Library, Audiovisual section and patients exposure facility.

In most of the institutes , the course curriculum offered is for community health worker (CHW) , diploma in one institute and basic training for family welfare visitor (FWV) in one institute. Minimum requirement for admission was SSC passed, average number of students / year / institute was 50-

projector, black board/white boards etc.

Distribution of library as per Institutes space 300-1200 sq. ft. seats about 50, total No of books 2000-7000 with availability of Journals.

Majority of the Institutes had manpower of average 10-15 per institute. Only NIPORT, Dhaka had 34 doctors and 22 nurses. Institutes of Chittagong, Sylhet, Pabna, Rajbari, Gazipur and Dhaka had formal assessment system.

DISCUSSION :

"Public health' is the organised response by society to protect and promote health, and to prevent illness, injury and disability. The workforce involved in this enterprise ranges from those who identify as public health professionals to those who may undertake aspects of public health functions in the course of their health or other related work.

Public health functions occur at a number of levels. Commonwealth, State and Territory governments are primarily concerned with the setting of public health policy, determining broad resource allocation and providing an appropriate regulatory framework. Governments need to be informed by population based research and surveillance systems. Current demand for public health skills reflects the diversity of related issues and the public health workforce, as well as the better understanding of the comprehensive range of competencies required to deliver appropriate and evidence-based services. There is a need for an improved focus for investment in public health resources which has the capacity to respond to public health priorities, recognises a greater range of opportunities for effective education and training, having regard in particular for workforce locus of employment, location and need for flexibility, and seeks out partnerships.

More specifically, there are workforce implications flowing from the Partnership Group's Work Program including research and development, information development, harmonisation of public health regulatory frameworks and stronger national monitoring and surveillance systems[6].

In united states, the Bureau of Labor Statistics projected that between 2000 and 2010, the work force they need is in shortage and accordingly the capacity building was planned.

Rural health care facilities include a wide variety of services along the continuum of care: nursing home, assisted living, home health, hospital, clinic, oral health, mental/behavior health, emergency, and pharmacy.[1]

Recent trends make clear that the struggle to find employment is widespread and that people at the low-wage and less educated end of the employment spectrum face an increasingly uphill battle to find jobs that pay adequately. As the growth of the economy has slowed, job growth is concentrated in positions requiring skills that are hard to find among the unemployed.

Bangladesh has managed to develop nation wide network of medical colleges, nursing and paramedical institutes. As per DGHS Health Bulletin 2009, there are 59 Medical colleges (41 of them are private), 13 nursing colleges (7 of them are private), 69 nursing institute (22 of them are private), 17 medical assistant training schools (10 of them are private), and 16 institute of health technology (13 of them are private). In spite of this growth to health workforce production, Bangladesh is still having health workforce shortage and skill mix & geographical imbalances. The World Health Report 2006 identified Bangladesh among 57 countries with critical shortage of doctors, nurses and midwives (Compared to WHO identified threshold of 2.28 doctors, nurses & midwives per 1000 population, Bangladesh has 0.56 per 1000 population). The Nurses: Doctors' ratio is below 1:1, which is among the lowest group in the world.

Repeated assessments have shown that there are major quality gaps in the teaching learning process and environment in health workforce education institutes. The recent growth of the non-government health professionals' education sector has increased the need of having functioning health professionals' regulatory bodies, which can work closely with the related government agencies to ensure the quality of education and practice. There is no recognized body to ensure the quality of public health education and accredit the related courses.[3]

Over 80% of Bangladeshi's turn to non-state providers as a first port of call when they fall ill. These health care providers include traditional healers, traditional birth attendants, village doctors, drug stores and NGO trained community health workers. Bangladesh Health Watch have discovered that there are only 5 physicians and 2 nurses per 10,000 of the population as opposed to 12 village doctors and 11 drug sellers. Community members often value informal providers as they only charge for the drugs, not the consultation. They also offer flexible payment schemes.

The report looks at the strengths and weaknesses of providers and offers suggestions for where improvements can be made. It is not uncritical of the quality of health service that is often supplied by informal providers but it argues that this is a reason that they should be trained and managed effectively. They conclude that the quality of care - across the board in the public and private sectors - needs improvement. Currently, unqualified providers give drugs and advice but rarely rely on laboratory testing or refer appropriately to the formal sector. This leads to problems related to the inefficient and improper prescribing of drugs which can lead to continuing ill health and impoverishment.[4]

Bangladesh is identified as one of the countries with

severe health worker shortages. However, there is a lack of comprehensive data on human resources for health (HRH) in the formal and informal sectors in Bangladesh. This data is essential for developing an HRH policy and plan to meet the changing health needs ofthe population. This paper attempts to fill in this knowledge gap by using data from a nationally representativesample survey conducted in 2007. [5]

The shortage of qualified health workers, especially in low-income countries, has drawn attention in recent times, as it seriously threatens the attainment of the millennium development goals (MDGs).[6]

Limitations:

Due to PRL, transfer of the previous DD (MA) /programme manager and also due to in absence of regular posting of the DD (MA) the work could not be done using the allocated time. So time constraints was a important factor also to complete the work due to developed situation.

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6 Syed Masood Ahmed et al. The health work force crisis in Bangladesh: shortage, inappropriate skill mix and inequitable distribution.

Editorial Commnets:

Public health workforce development is a serious issue. Here idea is to deal with populations and not individuals. It also absorbs significant national resources. Here a genuine effort has been made to assess the relevance and effectiveness of such a program in Bangladesh. Needles to say many such well designed research papers and auditing will be required before and form conclusion can be put forward. This is an eye opening article.

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Original Article

Needle stick injuries among health care workers in a tertiary care teaching hospital, Pokhara, Nepal

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Key words:
health care workers, needle stick injury, recapping

ABSTRACT

This study focuses on the knowledge, practices, awareness, occurrence, causes and risk due to needle stick injury, possible ways and means to minimize and prevent these risks.

Objectives: Needle stick injuries pose a significant risk of transmission of blood borne pathogens. The incidence is considered to be higher than current estimate. This study was carried out to find out the knowledge, practices, awareness, occurrence, causes and to explore the measures to minimize or prevent NSI among health care workers.

Methods: A cross-sectional study was carried out in Gandaki Medical College Teaching Hospital (CHARAK) in January 2011. Total of 113 HCWs working in Gandaki Medical College Teaching Hospital (a tertiary care hospital in Pokhara, Nepal) participated in this study. Standardized questionnaire was administered to 113 health care workers of various categories including doctors, nurses, laboratory technologists and technicians, and paramedical staffs from different departments of Gandaki Medical College, Teaching Hospital.

Results: Out of 113 participants 60.17% were nurses. Majority (77.87%) were in the age group of 20-30 years. 70.79%HCWs had experienced Needle stick injury but 52.5% suffered from NSI with unused needles and 47.5% HCWs suffered NSI from used needles. 68.42% of NSI sufferer of used needles reported the incident. 69.91% HCWs practices recapping of used needles. Majority of them 83.54% use single hand technique to recap. Knowledge about transmission of HIV and Hepatitis B by NSI was satisfactory. 98.23% and 89.38% of HCWs respectively were aware of HIV and Hepatitis B transmission through NSI but 41.6% of health care workers were unaware of the fact that needle-stick injuries can transmit hepatitis C. 82.3% HCWs had been vaccinated against hepatitis B. More than half of HCWs (52.21%) think NSI is due to lack of awareness where as 36.28% think NSI is accidental which can not be prevented and only 11.5% think it is due to lack of knowledge. 74.33% never attended formal lecture or program on NSI.

Conclusion: This study showed a high rate of occurrence of NSI with lack of awareness in HCWs. These issues need to be addressed, through appropriate education, training, awareness programs, developing and strengthening skills, competencies and broadening knowledge and other interventional strategies by the hospital management.

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INTRODUCTION

Health care workers are exposed to varieties of dangerous infections, needle stick injury is one mode of transmission of serious infections, Risk of accidental Needle stick injuries

(NSI) among Health care workers is very high and it is a matter of serious concern to all Health Care Workers (CHW). Needle stick injuries (NSI) are wounds caused by sharps such as hypodermic needles, blood collection needles, intravenous cannulas or needles used to connect parts of iv delivery systems. The level of risk depends on the number of patients with the infection and the precautions taken by the health care workers while dealing these patients. More than 20 diseases can be transmitted NSI which includes HIV, hepatitis B and C, malaria, tuberculosis, brucellosis, infectious mononucleosis, herpes, spotted fever and syphilis. There many factors which makes HCWs vulnerable for NSI. These factors may be include recapping practice, type of needle and sharps, handling/ transferring specimens, accidental collision between HCWs or sharps, IV line opening and blood drawing activities, clean-up, passing or handling devices or failure to dispose the needle. The incidence of NSI is considerably higher than current estimates, due to gross under-reporting (often less than 50%). HBV exposures has the highest risk for infection but effective post exposure prophylaxis and vaccine is available for its prevention. This is not so for HCV and HIV. All health care providing facilities should have effective hospital infection control committee to work in preventing diseases including blood borne diseases. A written standing order procedure (SOP) containing the precautions and procedures while dealing with blood and body fluids, reporting procedures for NSI and hazards, preventive measures, post exposure prophylaxis should be formulated and implemented. This study aims to find out the occurrence of NSI among HCWs, factors responsible for NSI, and explores the ways to minimize or prevent blood borne diseases due to NSI.

METHODS

This study was carried out at Gandaki Medical College Teaching Hospital (CHARAK) Pokhara, Nepal a tertiary care 300-bed hospital. in January,2011. Total of 113 health care workers from different departments of the hospital participated in this study. All these health care workers are directly exposed to blood products and needle-stick injuries while dealing with patients. was Emergency Department conducted an awareness program on NSI for health care workers working in GMC Teaching hospital, at the beginning of program data were collected by researchers from all the participants using a standardized questionnaire. Verbal consent was taken after explaining the objectives of the study. Questionnaire contained information on demographic data, job category, knowledge, practices, awareness and use of preventive measures regarding needle-stick injuries. At the time of the study, there was no written standing order procedure (SOP) regarding needle-stick injuries in the hospital.

RESULTS

A total of 113 HCWs participated in this study, including doctors 31 (27.4%), nurses 68 (60.2 %), lab assistants/technologists 7 (6.2%), auxiliary health workers/pharmacists 7 (6.2%) Among all participants 83(73.5%) were female and 30 (26.5%) were male. Majority of participants 88(77.9%) were in the age group of 20-30 years of age followed by 22(19.5%) in the age group of 30-40 years. In age group of 40+ there were only 3(2.6%). Of these, 80(70.8%) gave a history of NSI in some point of their carrier and 33(29.2%) had no history of NSI. Out of 80 NSI sufferers 42(52.5%) NSI were caused by unused needles and 38(47.5%) were suffered by used needles. Of those 38 NSI sufferers of used needles 26(68.4) reported the incident but 12(31.6%) had not reported the incident. All 113 (100%) respondents agreed on mandatory risk assessment should be done after NSI caused by used needles. It is found that needle recap is practiced by 79(69.9%) and recapping is not practiced by 34(30.1%) participants. Those 79 who practice needle recapping 66(83.5%) use single hand technique where as 13(16.5%) use both hand technique for recapping of needles. More than half 59(52.2%) of respondents favored the cause of NSI is lack of awareness followed by 41(36.3%) thought NSI is accidental which cannot be prevented. Only13 (11.5%) supported lack of knowledge as a cause of NSI. Of all participants only 47(41.6%) know HIV transmission can be prevented where as 66(58.4%) did not know HIV transmission can be prevented once NSI caused by contaminated needle with AIDS patient. Knowledge about disease transmission by NSI was found adequate regarding HIV and HBV. 111(98.2%) and 101(89.4%) participants know NSI can transmit HIV and HBV respectively. Knowledge about HCV transmission by NSI is comparatively inadequate which is only 58.4%. 113 health care workers of GMC Teaching Hospital who participated in this study 93(82.3%) were found vaccinated against Hepatitis B.

Demographic characteristics:

Table 1: Age Distribution

Age in years	Number	%
20-30	88	77.9
30-40	22	19.5
40+	3	2.6

Table 2: Sex Distribution

Sex	Number	%
Male	30	26.5
Female	83	73.5

Table 3: Job category

Job	Number	%
Doctors	31	27.4
Nurse	68	60.2
Lab. Technician	7	6.2
CMA/Pharmacist	7	6.2

Table 4: Summary of findings

NSI experienced by HCWs	Experienced:	80 (70.8%)	Not experienced:	33 (29.2%)
NSI experienced with	Used needles:	38 (47.5%)	Unused needles:	42 (52.5%)
NSI Reporting with used needles	Reported:	26 (68.4%)	Not reported:	12 (31.6%)
Incidence of NSI is	Preventable:	72 (63.7%)	Not preventable:	41 (36.3%)
Causes of NSI	Lack of awareness:	59 (82.0%)	Lack of knowledge:	13 (18.0%)
Practice of recapping	Practice:	79 (69.9%)	Don't practice:	34 (30.1 %)
Technique used for recapping	Single hand:	66 (83.5%)	Both hand:	13 (16.5%)
Program/Lecture on NSI	Attended:	29 (25.7 %)	Never attended:	84 (74.3%)
Vaccinated against Hepatitis- B	Vaccinated:	93 (82.3%)	Not vaccinated:	20 (17.7%)
NSI is with HIV contaminated blood, HIV transmission	Preventable:	47 (41.6 %)	Not preventable:	66 (58.4%)
Risk assessment once NSI is with used needle	Mandatory:	110 (97.3%)	Not mandatory:	3 (2.7 %)
Knowledge of NSI transmitted diseases	HIV:	111 (98.2%)	HBV:	101 (89.4 %)

DISCUSSION

This study showed that 70.8% HCWs had experienced NSI at some point in their careers. This data is nearly double of Exposure Prevention Information network (EPI net) data but nearly same of Safdarjang Hospital New Delhi data. More than half (52.5%) of NSI were caused by unused needle and only less than half (47.5%) of NSI were caused by used needle and 68.4% of NSI sufferers of used needles reported the incident. It shows the higher rate of reporting in comparison to several other studies. 69.9% of health care workers practiced recapping of needle which is higher than other studies. Certain clinical practices such as inappropriate handling of sharps, recapping needles were related to high risk of injury. Although majority of HCWs know that HIV, hepatitis B and C can spread by NSI, but inadequate safety measures they use to prevent or minimize NSI. Use of better safety devices, education, training, decreasing the inappropriate work load of HCW, safe environment and following standard precautions can help to minimize or prevent NSI. CDC report states that use of safety engineered devices would reduce NSIs by 76 percent. HCWs can be protected from NSI by encouraging them to seek alternatives to use of needles, minimizing use of needles, using safety devices. In US 8,00,000 HCWs suffer needle stick injuries each year and it is believed that only one out of three needle stick injuries are reported. Data from the EPINet system suggest that at an average hospital, workers incur approximately 30 needle stick injuries per 100 beds per year. In many health facilities including GMC Teaching hospital, even though the personnel are vaccinated, the seroconversion status after vaccination is not assessed. CDC recommendation is to test for antibody after completion of three injections of HBV vaccine,and if negative, give a second three-dose vaccine and test again for anti-HBsAg antibodies. If there is no antibody response, no further vaccination is recommended. If an employee has a blood exposure to a patient known or suspected to be at high risk of HBsAg sero- positivity, he should be given HBIGx2 (one month apart) or HBIG and initiate revaccination. It is estimated that 10%-25% injuries occurred while recapping a used needle . The recapping of needles has been prohibited under the Occupation Safety and Health Administration (OSHA) blood borne pathogen standard. Needle less or protected needle IV systems have decreased the incidence of needlestick injuries by 62%-88%.15Variety of needle devices with safety features are now available.

CONCLUSION

NSIs were found to occur in all categories of HCWs. Elimination of unnecessary injections, prohibition of recapping, proper disposal and careful handling of sharps, following universal precautions strictly and use of safer needle devices are effective measures of preventing NSI. All health institutions should have a health care worker service facility, which maintains records, and registers the incidence of NSI and has protocols for management and follow-up of NSI cases. Issues of occupational safety should be taken seriously. Protocols and program on preventive measures, mandatory recording and reporting of incidents, awareness program on NSI, regular training of all HCWs in handling and disposal of sharps, should be followed strictly.

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CME

Congenital Heart Disease

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Objectives:

By the end of this lecture readers should be able to

a. How foramen ovale gets closed?
b. How ductus arteriosus closure and increased systemic vascular resistance effect circulation.
c. Why Pulmonary Vascular Resistance falls to adult levels by 2-3 weeks of birth?
d. Why VSD PDA and ASD cannot be diagnosed clinically at birth?
e. Why Congestive Heart Failure of PDA and VSD is seen commonly at 6-10 weeks after birth?
f. Why clinical diagnosis of ASD cannot be made before 6 months of birth?
g. Use Nada's criteria for suspicion of heart disease.
h. Confirm that the heart disease is congenital.

Diagnostic implications of Circulatory Changes at Birth.

Some facts about fetal circulation:

1. Fetus obtains nourishment and oxygen through placenta.
2. The fetal lungs are non functional and pulmonary blood flow is minimal. This means that fetal lung has no role in oxygen supply to the fetus.
3. At birth lungs expand with first breath.
4. Clamping of umbilical cord results in sudden increase in peripheral resistance (PVR)
5. Ductus venosus and ductus arteriosus close.

Then circulation becomes adult type.

1. In fetus systolic pressures in the 2 ventricles as well as the pulmonary artery and the aorta are more or less identical.
2. Just after birth, resistance in the pulmonary circulation falls sharply increasing pulmonary blood flow.
3. This increased pulmonary blood flow reaching the (L) atrium increases (L) atrial pressure [LAP].
4. This increased LAP is also due to increased left ventricular diastolic pressure [LVDP] due to increased systemic vascular resistance because of clamping of cord.
5. This increased LAP causes approximation of septum primum with septum secondum leading to functional closure of foramen ovale.
6. This closure is also aided by fall in (R) atrial pressure because ductus venousus closes and cord is clamped.

Rise in systemic vascular resistance [SVR] means aortic pressure becomes higher than pulmonary pressure. Now blood flows from aorta to pulmonary artery through ductus arteriosus [DA]. In fetus this was reversed. Subsequently the DA constricts off. Thus the systemic circulation which was parallel in fetus becomes connected in series and adult type circulation is established. In fetus pressures in [L] and [R] sided chambers are more or less identical. Right and Left ventricles have equal wall thickness. Aorta and Pulmonary Artery are of equal thickness. This means that even if there is communication between the 2 sides there will be no flow.

The pulmonary vascular resistance will fall to adult levels by 3 weeks in normal child. In the presence of Ventricular Septal Defect [VSD] or Patent ductus arteriosus [PDA] it will take 3-6 weeks in preterm and 6-10 weeks in term babies for the PVR to fall to adult levels.

Implication:

Pulmonary artery is thick and muscular. A small L to R shunt will maintain a high pulmonary arterial pressure. PA will not distend and has limited capacitance. In PDA or VSD fall in PAP and regression of pulmonary vascular resistance is slower. The murmur of PDA and VSD is not heard at birth as pressures in both sides are equal. As pulmonary vascular resistance falls the L to R shunt increases and murmur will become audible in 3-4 days. VSD and PDA both present with ejection systolic murmur and clinical separation at this stage is not possible. Pulmonary vascular resistance becomes lowest at 6 to 10 weeks and its at this time that the baby will develop Congestive Heart Failure [CHF]. Since pulmonary vascular resistance falls more rapidly in preterm thus CHF may develop by 3 weeks in a preterm baby.

In ASD a thick Rt. ventricle with poor diastolic capacitance prevents Lt to Rt shunt. Thickness of the ventricular wall takes approximately 6 months to regress thus clinical diagnosis of ASD can be made at about 6 months of age. VSD, PDA and ASD cannot be diagnosed clinically at birth.

Obstructive lesions like AS and PS and regurgitant lesions like MR and TR are operative from birth and thus murmur at birth would point to one of them.

Diagnostic implications of pressure and resistance changes in cardiac chambers and great vessels.

For blood to flow proximal pressure must be higher than distal. If we apply Poiseuille's equation

Pressure = Flow X Impedance.

Pressure mmHg. Flow L/min. Impedance = dynes/sec/cm^3 or Woods unit (80 dynes/sec/cm^3 = 1 Woods)

This is a Non rigid circuit, pulsatile flow and Hemoglobin concentrations are not being considered.

Thus BP = CO X SVR. Most Systemic HTN is due to SVR and not CO changes.
(CO = Cardiac Output and SVR = Systemic Vascular Resistance)
Applied to Pulmonary circulation if PAH is due to Flow increase its Hyperkinetic PAH and if due to PVR its obstructive PAH. PAH will cause hypertrophy of PA. Persistent PAH will cause intimal hyperplasia and fibrosis of PA leading to Pulmonary Vascular Obstructive Disease (PVOD) this is an irreversible change and the condition becomes inoperable and incurable.

This is the basis of Eisenmenger syndrome where PAH is associated with R to L shunt at atrial, ventricular and pulmonary artery level.

Hyperkinetic PAH will have large L to R shunt. Obstructive PAH will have PAH with small L to R shunt. Pulmonary artery can accommodate 3 times flow without changes in pressure thus large L to R shunts can occur without PAH.

Communication between the 2 atria will equalize the pressure between the atria. L to R shunt will occur at small difference in pressure depending on distensibility characteristics. This L to R shunt will be silent and the RV will accommodate the excess flow in diastole. Thus ASD will lead to diastolic overload of RV.

In VSD the pressure gradient is more. Shunt volume will depend on defect size. Smaller defect means loud pansystolic murmur and larger ejection systolic murmur. In large VSD pressures are identical. The shunt flow will depend on PVR. The Rt ventricle receives blood when its contracting and its cavity is becoming smaller. Thus the Rt Ventricle just acts as conduit and blood flows straight to Pulmonary Artery (PA). In diastole the L to R shunt is accommodated in L ventricle in diastole. Thus VSD leads to diastolic overload.

In PDA flow is both in diastole and systole as aortic pressure is higher than Pulmonary Artery in both diastole and systole. Thus continuous murmur is exhibited. The shunted blood is taken up by the LV in diastole, thus diastolic overload of LV is seen. A large PDA means Pulmonary Arterial Pressure and aortic Pressure are identical and shunt flow then will depend on PVR. Here PDA will have ejection systolic murmur.

1. Dependent shunt means flow is dependent on PVR.
2. Obligatory shunts are not dependent on PVR.
3. Obligatory shunt with high PVR will mean difficulty in determining operability of the lesion.

Does the child have heart disease?
TO determine if the child has heart disease the simplest mode will be to use Nada's criteria. It has 4 major and 5 minor criteria.

Major:

- Systolic murmur grade III or more.
- Diastolic murmur.
- Cyanosis.
- CHF.

Minor:

- Systolic murmur < III.
- Abnormal S2.
- Abnormal ECG.
- Abnormal CXR.
- Abnormal BP.

Any one major or 2 minor criteria will point towards the child having cardiac disease.

Is the heart disease congenital ?

Congenital heart disease is a structural abnormality of heart present since birth.

Presence of cardiac disease recognized in fetal life or just after birth wil point towards congenital heart disease. They will be either obstructive or regirgitant. Obstructive and regurgitant lesions.

- Recognized in the first 2 years of life then congenital cardiac lesion is very likely.
- Congenital cardiac defect murmurs are generally parasternal rather than apical. But the presence of apical murmurs in MR does not exclude congenital etiology.
    - ASD secondum type with MVP.
    - ASD primum.
    - Ebstein's malformation in corrected congenital TGV.

Central cyanosis.

Extracardiac congenital anomalies with heart disease. All point towards congential cardiac condition.

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J-GMC-Nepal subscribes to the policy of uniform requirements for manuscripts which facilitate resubmission of papers to journals without extensive recasting. Authors are advised to consult the New England Journal of Medicine (N Engl. J Med 1997; 336: 309-15).

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Original articles should normally be in the format of under following heads Introductions, methodology, Result, Discuss, Conclusions, and References. Please provide a 200-word structured abstract. The discussion in particular should be clear and concise and limited to matters arising directly from the results. Avoid discursive speculation. Randomized clinical trials should be clearly identifi ed as such in the title and abstract.

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The Editors commission lead articles that are 600-900 words in length and address controversial topics of current interest. They should be supported by no more than ten key references. Submissions may be subjected to external review and assessment by the Editorial Board before acceptance. The Editors retain the right to alter style and shorten material for publication.

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The Editors welcome topical correspondence. Letters should not exceed 250 words and should be typed double-spaced.

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On the title page give: (1) the title of the article; (2) the name and initials of each author; (3) the department and institution to which the work should be attributed; (4) the name, postal and e-mail addresses, telephone and facsimile numbers of the author responsible for correspondence and to whom requests for reprints should be addressed; (5) running title; (6) sources of financial support.; and (7) the category in which the manuscript is being submitted (orginal article, review, etc.).

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Use abbreviations sparingly. Terms that are mentioned frequently may be abbreviated but only if does not impair comprehension. Abbreviations must be used consistently and must be defined on first use.

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Set out clearly the objectives of the study, identify the primary and secondary hypotheses, the chosen end-points and justify the sample size. Investigators embarking on randomized controlled studies may wish to consider the CONSORT statement (JAMA 1996; 276: 637-9).

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Whenever possible use graphical presentation to illustrate the main fi ndings of a study. The use of standard deviation and standard error should be clearly distinguished and presented in parentheses after the mean values.

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Clearly describe methods used for each analysis. Methods not in common usage should be referenced. Report results of statistical tests by stating the value of the test statistics, the number of degrees of freedom and the P value. Actual P values should be reported to two decimal places, especially when the result is not signifi cant. The results of the primary analyses should be reported using confidence intervals instead of, or in addition to P values.

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