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MESSAGE FROM THE EDITOR-IN-CHIEF

DEAR READERS,

This issue is dedicated to the hundreds of qualified medical professionals, academic staff, graduate students and others, who are loyal readers and contributors.

Each year in this space we offer our heartfelt thanks to the volunteer peer viewers who help ensure the quality and integrity of the Mongolian Journal of Health Sciences. We simply couldn't be successful in our jobs as editors without their continued dedication and commitment to the scientific community.

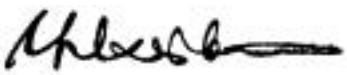
It has been passed 8 years since Mongolian Journal of Health Sciences was first published. It has been 66 years since the development of Mongolian medicine has pursued the policy of modern scientific medical approach. Alongside with active development of national health sector, medical practitioners and specialists have duly invested in the establishment of scholarly research team with capacity to conduct studies at contemporary level in the area of medicine.

Many of young promising medical scientists are successfully working in the modern scientific laboratories and research institutes of Mongolia as well as those of developed countries. Their research results are sited and published at the internationally recognized journals with high impact factor.

Therefore, one of the goals of Mongolian Journal of Health Sciences is to disseminate and share our accumulated research achievements and experiences with international research colleagues and scholars.

All the best wishes to the dear readers of Mongolian Journal of Health Sciences!

Editor-in-Chief



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MONGOLIAN JOURNAL OF HEALTH SCIENCES

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Editorial address: Health Sciences University of Mongolia
P. O. 48 Box 111,
Ulaanbaatar 210648, Mongolia
Fax: (976)-11-321249
E-mail: davaalham@yahoo.com

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Nestin expression on the ectodermal and mesodermal organs associated with chronic ethanol exposure in a rat model

Ayurzana.A[1]*, Avirmed.A[2], Amgalanbaatar.D[2] Purevsukh.S[1], Erkhembulgan.P [3]
[1]Department of General Practice and Preventive Medicine
Health Sciences University of Mongolia
[2]Department of Anatomy,
Health Sciences University of Mongolia

ABSTRACT

The goal of our study was to determine the effects of ethanol on the ectodermal and mesodermal organs employing an animal model. After fertilization, the animals were divided into three groups. The first group of rats received 5% ethanol containing diets. On GD 21, the pregnant rats were anesthetized with ether, and their fetuses were removed by cesarean section. For histological observation, sections were stained with hematoxilin and eosin. For immunohistochemical examination, sections were prepared with anti-laminin and anti-nestin antibodies using an immunoperoxidase method. Nestin was noted to be distributed abundantly in the granular layer of the epidermis. Our study suggested that the development of skin and its derivates was delayed, and the apoptotic processes were retarded from chronic ethanol exposure.

Key words: Nestin, alcohol consumption, rat model, laminin, melanin granule

INTRODUCTION

The effects of ethanol on mesodermal and ectodermal organs includes: the excessive accumulation of melanocytes on the epidermis,[1] dental anomalies,[2] heterotopic growth in the brain, [3] and an irregular distribution of cells in the brain.[4]

Prenatal exposure of ethanol induces increased numbers of melanocytes in the upper layer of the epidermis.[5] It's known that ethanol affects ACTH and increases the concentration of MSH in the blood. Thereby, it leads to increased melanocyte distribution in the epidermis.[6] Also, melanogenesis is the most vulnerable process adversely affected by ethanol exposure in utero.[7]

Studies in mice have shown a delay in the eruption of the incisors, reduced dimensions of the cranium and jaw[8] and disruption of enamel formation.

It has been reported that ethanol exposure during the prenatal period induces various morphological changes in some brain regions, such as: leptomeningeal heterotopias, alterations of cortical architectures in the cerebrum, Purkinje cell loss, fusions of folia in the cerebellum, and a reduction in pyramidal cell numbers. [9]

In the present study, we investigated the effect of maternal ethanol consumption on mesodermal and ectodermal organs by immunohistochemical staining using nestin and laminin antibodies.

***Corresponding author:**
Amgalanbaatar Dorjkhuu
Department of Anatomy, School of Bio-Medicine
Health Sciences University of Mongolia
E-mail: a_ayurzana@yahoo.com

MATERIAL AND METHODS

The following study was designed to investigate the effects of long-term EtOH exposure. Twenty four Wistar rats, in both sexes, were divided into three groups: EtOH (n = 7), control (n = 8), and chow (n = 9). The first group was given free access to a liquid diet (Oriental Yeast Co., Tokyo, Japan), containing 5% ethanol. The second group of rats was fed the same liquid diet with the ethanol replaced by isocaloric sucrose. They were fed an equal volume of diet consumed by the ethanol exposed dams on a daily basis (pair fed control). As an intact control, the third groups of pregnant rats were fed lab chow and water ad libitum. On GD 21, pregnant rats were anesthetized with ether, and fetuses were removed by cesarean section. For histological observation, sections were stained with hematoxilin and eosin. For immunohistochemical examination, sections were prepared with anti-laminin and anti-nestin antibodies using an immunoperoxidase method.

Immunohistochemistry

Antibodies

Primary antibodies were purchased as follows: mouse anti-rat nestin monoclonal antibody (P21263 AbD serotec, UK) and rabbit anti-laminin polyclonal antibody (P07942 AbD serotec, UK); , Secondary antibodies were obtained from the following sources: Biotinylated anti-mouse IgG made in horse (BA 2000) Vectastain Elite ABC kit, Vector laboratories.

Statistical Methods. The Graph Pad prism was used to analyze these data sets. Differences in mean values between groups were considered significant if $p < 0.05$.

RESULTS

The initial weight (301±7.4 vs 265±9.70) and the ended weight of pregnant female rats (388±12.51 vs 287±9.2) were significantly reduced in treated group, despite maintaining a healthy appearance; the average weight gain of controls was approximately 25% greater than that of the treated rats (Table 1). The gestational period of treated mothers was longer than that of the control rats, and the pups of treated dams weighed 21% less than the control pups at birth (4.77±0.23 vs 6.04±0.82).

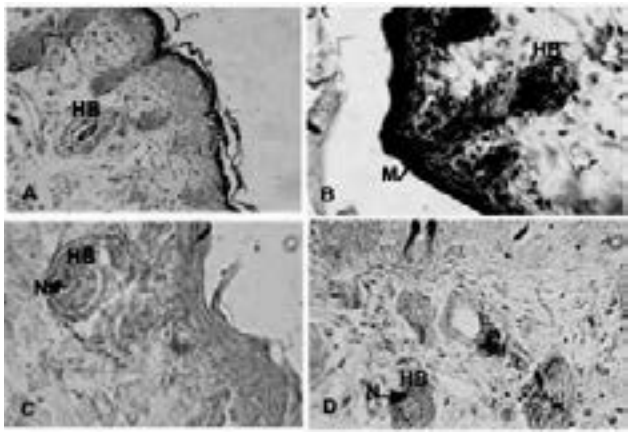

Figure 1. Photomicrograph of skin (taken from the temporal region of brain) at low magnification. HB-hair bulb, M-melanocytes, N-nestin, A, B H&E stain, C, D Nestin immunostaining in a consecutive section of A and B, (A, D-pair fed, B, C- EtOH exposed rats\) Laminin positive areas were not detected. Bars A, B 200 μm, C, D 600μm

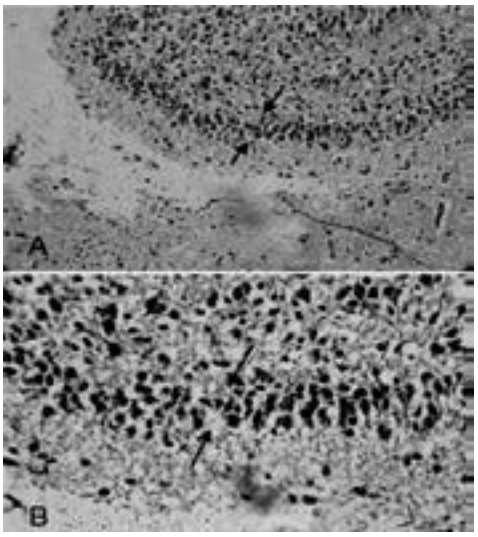

Figure 2. Photomicrograph of sagittal section of the cerebellum in an ethanol exposed rat. A, B H&E stain. Arrows in A and B indicate the irregular distribution of the granular layer, Bars, A, B 400 μm

Table 1. The parameters of ethanol exposure

Parameter	Control (n=7)	Treated (n=7)
Gestational time (days)	21	22±0.3*
Weight gain	85±11	64±5.6*
Total number of offspring/female rat	10±2.4	7±0.2*
Offspring weight (g) at birth	6.0±0.5	4.8±0.2*

The values are the mean ± SD. *p≤0.05 compared to the controls

Histological analysis in ethanol treated group revealed a significant changes on skin and its derivates. Mostly, differential development of epidermis was delayed and melanocytes appeared abundantly in the upper layers of epidermis. It could be seen in Figure 1. Note that the significant higher accumulation of melanocytes on the spinous, granular, and translucent layers of epidermis in EtOH fed group.

In the EtOH exposed group, we found the irregular distribution of cells in the granular layer of the cerebellum (Figure 2). This morphological alteration was observed in all ethanol exposed rats. Purkinje cell soma, dendrites, and axons were strongly labeled with laminin antibody in ethanol exposed rats as well as in pair-fed rats. The laminin positive Purkinje cells were not found in the molecular layer or ectopically in the medullary layer of ethanol exposed rats (data not shown).

The sagittal section of the first mandibular molar

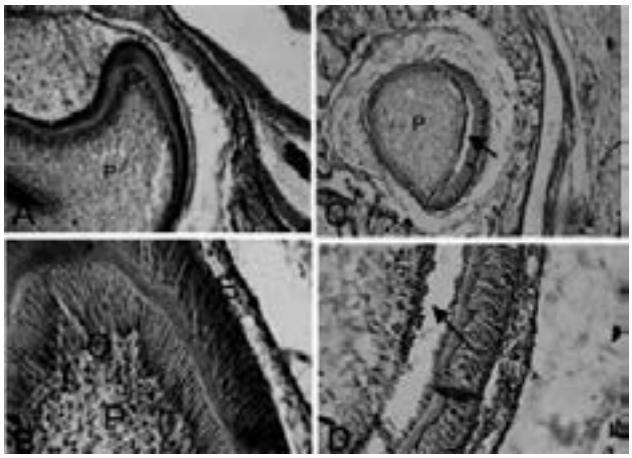

Figure 3. Photomicrograph of the first mandibular molar on the first postnatal day showing structural characteristics of the tooth germ, P-pulp, O-odontoblast, E-enamel, D-dentin, A, B-pair fed, C, D-EtOH exposed group. H&E stain, Bars A, C 100 μm, B, D 400μm

was chosen for observation. In the control group, the developmental stage of the tooth germ was the late bell stage (after the initiation of calcification) (Figure 3A, D). Odontoblasts were observed, the enamel and dentin formation had already formed. In ethanol exposed group, the developmental stage of the tooth germ was the early bell stage. Odontoblasts were not observed and enamel formation had not started (Figure 3B, C)

DISCUSSION

In the present study, oral administration was used because it is more similar to human exposure. As show here, ethanol exposure during the gestational period was affected by litter size (number of offspring/dam) and by the body weight of the offspring of alcoholic dams, a finding that agreed with other studies.[10] Studies in rodents have shown that ethanol directly affects the development of embryonic tissue and results in a low birth weight, even when the nutritional status of the dams is maintained to allow normal weight gain during pregnancy.[11]

Our findings are consistent with other studies [12] which have shown that alcoholic dams lose body weight during pregnancy and have a smaller number of offspring compared to isocalorically fed dams. These results suggest that ethanol directly affects the capacity to bear offspring, regardless of the nutritional status.

In the present study, we found various malformations on the mesodermal and ectodermal organs. There have been a few reports addressing nestin evaluation following chronic ethanol exposure in utero. We found that chronic ethanol exposure in utero could induce an increased amount of nestin accumulation in the mesodermal and ectodermal organs of fetuses even though their dams did not receive a lethal amount of ethanol. We observed that the nestin accumulation was increased from the chronic ethanol exposure in utero. In particular, nestin was observed abundantly in hair follicles. We believe that nestin occurred predominantly after ethanol exposure. It may be from the cytoprotective effect of nestin, or, it may have increased because of protection from mutagenic agents.

In the ETOH group,the developmental stages were delayed and enamel formation was not completed. These changes suggested that the administration of ethanol during pregnancy influenced the developmental stages and, hence, enamel formation. [13]The results of the present study and those of other investigations, [14, 15] have shown that the tissue responses to the ingestion of ethanol during pregnancy are not uniform. Hence, we observed that the enamel formation was more pronounced in the enamel matrix than in the tooth germ as a whole, which may indicate that enameloblasts were more susceptible to ethanol than other cells during the period analyzed. In support of this conclusion, Phillips and Krueger [16] stated that cells with intense metabolic activity show a specific response when exposed to ethanol. In conclusion, ethanol intake during pregnancy reduced the development of the tooth germ and enamel matrix formation, and delayed the overall tooth development and tooth protrusion

The apoptotic processes were retarded from the chronic ethanol exposure. It could be say as the followings.

The melanocyte formation increased from chronic ethanol exposure. Also nestin and laminin accumulation were increased, therefore, the differential development of epidermis was decreased.

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Diagnostic Ultrasound Criteria for Thyroid Cancer

Delgerekh Ts[1*], Gonchigsuren D[2], Lkhagvasuren Ts[2]
1-Department of Radiology, National Cancer Center of Mongolia
2-Health Sciences University of Mongolia

ABSTRACT

The management of thyroid nodules is multi-disciplinary and involves head and neck surgeons, pathologists, and radiologists. Ultrasound is easy to perform, widely available, does not involve ionizing radiation, and is readily combined with fine needle aspiration cytology (FNAC).[1] It is, therefore, an ideal investigation method of choice for evaluating thyroid nodules. It evaluates specific features that help in identifying the nature of the nodule, and FNAC helps confirm the differential diagnostic accuracy of the thyroid cancer.[2,3]

By the cytological evaluation of 147 patients with thyroid cancer, 89 (61%) had papillary cancer, 44 (30%) had follicular cancer, 5 (3.4%) had medullary cancer, and 9 (6.1%) had anaplastic cancer. The main US and CD US signs of thyroid cancers included: 131 (90.3%) locking capsular margins, 126 (86.9%) had a non-homogeneous echo structure, 121 (83.45%) were hypoechoic, 119 (82.1%) had irregular margins, 104 (71.7%) had non-smooth margins, 99 (68.3%) were abnormally shaped, 53 (36.55%) had a cystic component, 36 (24.8%) had micro calcifications, and 15 (10.2%) had cervical lymph nodules one side of the metastasis, that were hypervascular (65%), hypovascular (27%) or avascular (7.5%).

Keywords: Thyroid gland, cancer, halo, ultrasound

INTRODUCTION

Among endocrine diseases, the prevalence of thyroid disease is second after diabetes mellitus.[4,5] Thyroid cancer represents about 1.47% of cancer cases as the detection rate among endocrine cancers is increasing.[6] In Mongolia, the number of cases of thyroid cancer is increasing, making early detection and differential diagnosis essential. Thyroid cancer is eight times more common in women than in men with the prevalence increasing with age. The risk of malignancy in a euthyroid patient with a solitary thyroid nodule is estimated to be 5%–10% with a range of 3.4%–29%.

Overall, thyroid cancer is a relatively uncommon malignancy which constitutes about 0.5% of all malignancies. However, imaging plays an important role in patients' management as:

(1) Most thyroid nodules are benign, usually as a part of multinodular changes. Clinical examination is poor at detecting small thyroid nodules, highlighted by the fact that approximately 70% of normal thyroid glands contain nodules of less than 1 cm when examined sonographically. The ultimate aim in the management of a thyroid nodule is to identify the small group of patients in whom the nodule is malignant and would benefit from early aggressive treatment while avoiding unnecessary investigation and surgery in the majority of patients who have a benign nodule. Imaging, especially with the use of high resolution ultrasound, helps to differentiate a malignant nodule from a more common benign thyroid nodule, and identify a malignant nodule against a background nodular goitre, the incidence of which varies between 1% and 3%.

(2) Treatment planning and patients' prognosis for thyroid cancer depend largely on the tumour staging. Imaging helps early detection of local invasion, regional nodal spread, and the presence of distant metastases.

To evaluate the outcomes of ultrasound (US) diagnosis and the differential diagnosis of the thyroid cancer.

MATERIAL AND METHODS:

All patients were studied by US, color-Doppler US, and US guided fine needle aspiration cytology. Ultrasound is an ideal imaging modality for the detection and assessment of a thyroid nodule. It is easy to perform, widely available and does not involve ionizing radiation. The use of high frequency transducers has significantly improved the spatial and contrast resolution in evaluating superficial structures including the thyroid gland. One obvious advantage of ultrasound over other imaging modality is its ability to combine with fine needle aspiration cytology (FNAC) to increase the diagnostic accuracy.

FNAC is inexpensive, widely available, and easy to perform, and is, therefore, regarded as a part of the initial

***Corresponding author:**
Delgerekh Tsend
National Cancer Center of Mongolia
Bayanzurkh district-18 khoroo, Nam Yan Ju street-210640
E-mail: delgerekht@yahoo.com

investigation of a thyroid nodule. It has a pre-operative predictive accuracy of more than 90% and aids the surgeon in selecting the most appropriate procedure prior to surgery.

RESULTS: By cytological findings, of these 147 patients with thyroid cancer, 89 cases (61 %) had papillary cancer, folliculary cancer was present in 44 cases (30 %), medullary cancer in 5 cases (3.4 %) and anaplastic carcinoma was detected in 9 cases (6.1 %).

131 female and 16 male patients with a mean age of 50 years old (between 41-55) had thyroid cancer.

The main US and CD US signs of thyroid cancers included: 131 (90.3%) without capsular margins, 126 (86.9%) had a non-homogeneous echo structure, 121 (83.45%) were hypoechoic, 119 (82.1%) had irregular margins, 104 (71.7%) had non-smooth margins, 99 (68.3%) were abnormally shape, 53 (36.55%) had a cystic component, 36 (24.8%) had micro calcifications, and 15 (10.2%) had involved cervical lymph nodules one side of the metastasis. If 3 or more of these signs occur, with involvement of lymphatic nodules, a diagnosis of thyroid cancer is confirmed.

Ultrasound features of thyroid nodules

The vast majority of thyroid nodules are benign, and the role of a radiologist in assessment of the thyroid gland is to differentiate a malignant thyroid nodule from the more commonly seen benign ones. It is, therefore, important to evaluate the sonographic features of thyroid nodules as these aid in their characterization.

Echogenicity

The incidence of malignancy is 4% when a solid thyroid nodule is hyperechoic. If the lesion is hypoechoic (Fig. 1), the incidence of malignancy rises to 26%. However, hypoechogenicity alone is inaccurate in predicting malignancy ($p<0.0001$).

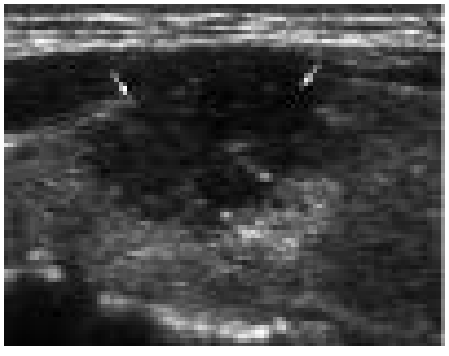

Figure 1. Longitudinal grey scale sonogram shows a solid, hypoechoic thyroid nodule (arrows) with ill-defined margins anteriorly. Histology shows: papillary carcinoma.

Margins

A malignant thyroid nodule tends to have ill-defined margins on ultrasound (Fig. 1). A peripheral halo of decreased echogenicity is seen around hypoechoic and isoechoic nodules and is caused by either the capsule of the nodule or compressed thyroid tissue and vessels. The absence of a halo has 17.7% ($p<0.0001$).

Calcification

Fine punctate calcification (Fig. 2) due to calcified psammoma bodies within the nodule is seen in papillary carcinoma in 25%–40% of cases ($p=0.012$). If used as the sole predictive sign of malignancy, microcalcification is the most reliable one with an accuracy of 76%. Coarse, dysmorphic, or curvilinear calcifications commonly indicate benignity (Fig. 3).

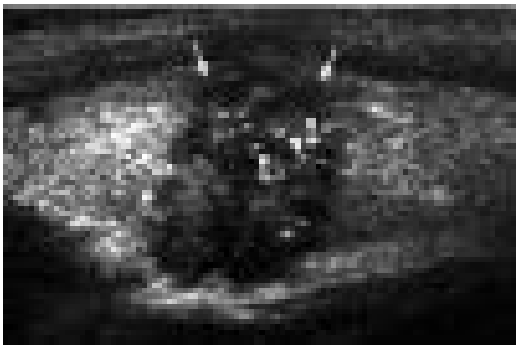

Figure 2. Longitudinal grey scale sonogram shows characteristic punctate calcifications within an ill-defined solid hypoechoic thyroid nodule which is highly suggestive of papillary carcinoma.

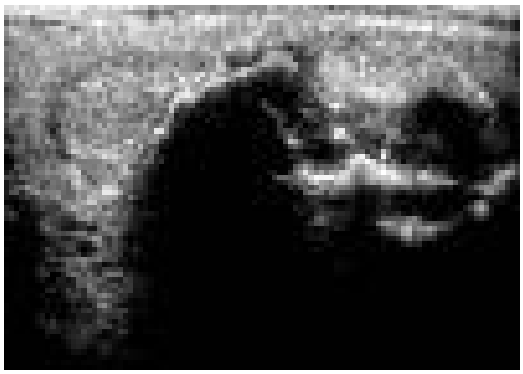

Figure 3. Longitudinal grey scale sonogram shows coarse calcifications (arrows) with dense shadowing within a thyroid nodule suggestive of benign calcification.

Solid/cystic

It is generally believed that thyroid nodules with large cystic components are usually benign nodules that have undergone cystic degeneration or haemorrhage (Fig. 5). However, (Fig. 6) papillary carcinoma occasionally demonstrates a cystic component and may mimic a benign nodule, though the presence of punctate calcification within the solid component helps in its identification ($p=0.150$).

Multinodularity

It is a myth that multinodularity implies benignity, as approximately 10%–20% of papillary carcinomas may be multicentric. In those with true solitary nodules confirmed at surgery, the risk of cancer is the same as in those with multinodular goitres. Therefore, against a background of multinodular changes, extra caution should be taken not to miss a suspicious nodule.

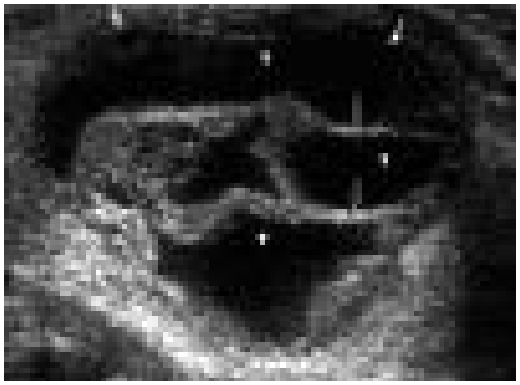

Figure 5. Longitudinal grey scale sonogram shows a well-defined heterogeneous thyroid nodule with a large cystic component and septation . These features are compatible with a benign hyperplastic nodule.

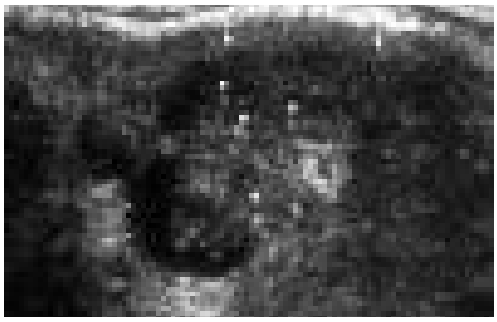

Figure 6. Transverse grey scale sonogram shows a cystic component within a papillary carcinoma of the thyroid. The presence of punctate calcifications identifies its malignant nature.

Colour flow patterns

In general there are three patterns of vascular distribution within a thyroid nodule.[7]

Type I: complete absence of flow signal within the nodule.

Type II: exclusive perinodular flow signals.

Type III: intranodular flow with multiple vascular poles chaotically arranged, with or without significant perinodular vessels.

Type III pattern is generally associated with malignancy. Types I and II are more commonly seen in benign hyperplastic nodules. Unfortunately, if used as the sole predictor of malignancy, colour flow characteristics are not accurate, and have to be used in combination with other features seen on grey scale ultrasound.

It is well recognized that the predictive ability of ultrasound for malignancy is effective only when multiple signs are present in the same nodule. Although their predictive value increases in summation, it is at the cost of sensitivity.

DISCUSSION

By an investigation of the morphology of thyroid cancers, a high differentiated carcinoma was seen in 90.4% of the cases in the current study which was equal to the results of studies from China (75-83%), Russian (88-93%), Korea (80-95%), America (90-95%) and Hong Kong,China (82-90%).[1,8]

In the study of Munkhbaatar D, Enkhbayar D, et al., US signs such as acapsularity margins, hypoechoic echogenicity, poorly defined irregular margins, and a non-homogeneous structure showed the same results in this investigation.[6]

In this investigation, the prevalence of thyroid gland disease was higher in female patients (89.1%), which is consistent with the study of Russian researcher Dvorchenko VV et al (85%).[5] The Sex ratio (8.2:1 for female patients) in the current study was similar to the results of an American study (6.7:1), Korean study (5:1), and a Russian study (5.5:1), but was significantly different from the Italian study (2-4:1). The mean age in this study (41-55) was the same as the study of Russian researcher Dvorchenko VV et al. (41-50), the study of Hong Kong researcher Anil T Ahuja (50-56), and with the study of Korean researcher Kim Kyung (47.7). The main ultrasound signs of thyroid gland diseases in this study were acapsularity margins, hypoechoic echogenicity, poorly defined irregular margins, non-smooth margins, an abnormal shape, contusing a cystic component, and having a non-homogeneous structure; while in the study of Kim Kyung, hypoechoic echogenicity, poorly defined irregular margins, non-smooth margins, and hypervascularity signs were the same, but, lymph node metastasis and calcifications were significantly higher.[8]

CONCLUSIONS

The management of a thyroid nodule is multi-disciplinary and involves radiologists, head and neck surgeons, and pathologists. Radiologists must be familiar with the various signs on ultrasound that help to distinguish benign from malignant thyroid nodules and the typical appearance of common thyroid cancer. If 3 or more of these signs occur, with involvement of lymphatic nodules, a diagnosis of thyroid cancer is confirmed.

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Immunohistochemical analysis in colorectal carcinoma and precancerous lesions

Adilzaya D.[1]*, Roettger P.[2], Galtsog L.[1], Bayarmaa E.[1], Tuul B.[1]
[1]Department of Pathology and Forensic medicine, School of Bio-Medicine, Health Sciences University of Mongolia
[2] The Institute of Pathology, The Hospital of Dueren, Germany

ABSTRACT

Colorectal carcinoma occurs at all ages but people aged 39-59 affected more frequently. It spreads much more among the population of Europe and North America. It has tendency of increasing among the population of Asia. Some researchers consider that heredity factor has inter affection with surrounding environment. Lately in our country number of people who are affected with colorectal cancer, it is connected with the analyze index of endoscopy and biopsy. In 2008-2009 we did a histological and immunohystochemical analyze in 45 biopsy and in 135 biopsy of control we used P53, Ki67, CDX2, CEA, CK20, CK7, CK18, CA125 marker.

In our research 23 patients aged 30-89 were involved, 16(70%) of them were males and 7(30%) were females. For age 7 (30%) of them were 30-49, 6(26.1%) and 5(21.7%)-70-79. Sex proportion of males and females of colorectal cancer was 11:5, their mean age was 58.1±0.4. Seeing from the result of immunohistochemical analyze when we analyzed p53 marker on 16 case which was diagnosed as colorectal cancer, 7 adenoma in 25% revealed as negative 25% medium negative and in 50% it revealed strong positive in adenoma p53 marker medium positive activation was 28.5% strong positive reaction revealed by 71.4%. Ki67 was in 25% strong positive or with 70% and revealed 11/16 medium positive activation. When we analyzed Ki67 marker in adenoma medium and strong positive condition occupied most of percentage. 88% of colorectal cancer was diagnosed as adenocarcinoma. Cases involved in research were diagnosed in the p53 marker stage or in the later period in G2 of cell or at medium secretion period. Among p53 marker of cancer 50% was medium strong positive, in 70%, Ki67 marker revealed medium positive it shows that toxicity of cancer as reveals with high speed Classic marker CK20 of colorectal cancer revealed in 75 as medium and strong positive reaction. It expresses that mostly primary cancer of heredity cause.

INTRODUCTION

Colorectal cancer occurs widely an all the ages but mostly people aged 39-59 are taken ill and males are predisposed more.[1] For geography common propagation is high on among the population of Europe and North America. Lately it has tendency of increasing in the population of Asia, 40-120 case is diagnosed and approximately 5-10 persons are newly taken ill in a year.[2] Researchers consider that its factor has integrated inter affect with the environment.[3] For our country number of patients has tendency of increasing, it is connected with index of endoscopic and histological analysis increase.[4] Immunohistologocal analyse has high quality of peculiarity and sensibility and it is used to reveal peculiar antigen. Research work of detecting peculiar antigen on patients with colorectal cancer and its preceding disease and defining change of early period of cancer hasn't been done and became the background of our research work.[5]

***Corresponding author:**
Adilzaya Dashdorj, MD, MSc,
Department of Pathology and Forensic medicine,
School of Bio-Medicine, Health Sciences University of Mongolia,
E-mail: adilaa1966@yahoo.com (Tel-9903-1136)

MATERIALS AND METHODS

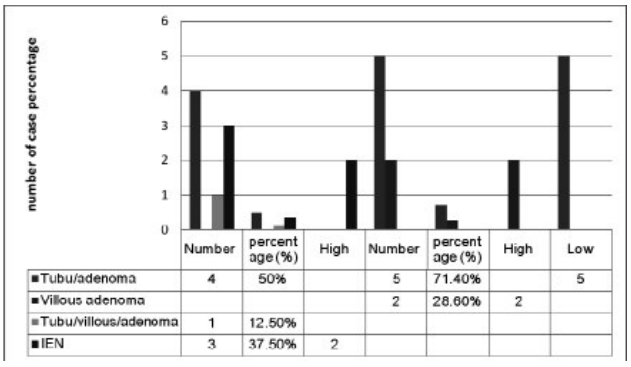
Using immunohistochemical in early diagnose of cancer become standard method in the practice of pathology. We decided to use marker of determining primary colorectal cancer and metastasis. P53, Ki67, and CDX2 of nucleus paint and CEA, CK20, CK7, CA125, CK18 marker of membrane and cytoplasm.

Immunohistochemical reaction

Reaction result gives change in any part of cell. Cell membrane, cell plasma and Golgi apparatus when we evaluate result of reaction by the method of negative number, MC. Carthy and others Histo Score (HS) used this method in 1985. Depending on paint color it is divided into 4 degrees. Advanced system of counting immunohistochemical reaction hasn't been appeared researchers and pathologists give quality assessment.[6] If it is not painted at all it is marked negative or (-), when the depth of painting is about 20%-positive or (+) and when painting become depth becomes 20-70% medium positive or (++), if depth of painting is more than 70%-strong positive or (+++). Each case which is involved in the study was concluded in every marker by above mentioned method.[7]

RESULTS

In the study 23 patients aged 30-89 involved. Males occupied 16(70%), 7(30%) females, aged 30-49, 6(26.1%), aged 50-59, 5(21.7%), aged 70-79. Proportion of sex of males and females is 11:5 and their (life expectancy) mean age is 58.1±0.4. Adenomatous polyp by histological classification 4 case of tubular adenoma, 1 case of tubular-villous adenoma and chorion, dysplasia or (IEN) was diagnosed by 3 case by immunohistochemical method 5 cases of tubular adenoma, 2 cases of villous adenoma by grade of cell secretion, low grade 5(74.1%), high grade 2(26.8%) was diagnosed. (Figure1)

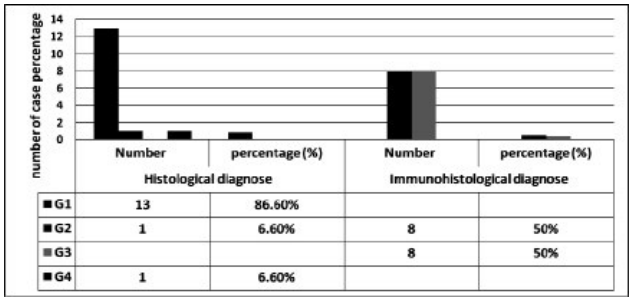


	Number	percentage (%)	High	Number	percentage (%)	High	Low
Tubu/adenoma	4	50%		5	71.40%		5
Villous adenoma				2	28.60%	2	
Tubu/villous/adenoma	1	12.50%					
IEN	3	37.50%	2				

Figure1. Number of adenoma case

When we classified 12.75% of 16 case of cancer was diagnosed in pT_3 stage. This shows that colorectal cancer which occurs among Mongolian people has hereditary symptom and clinical symptom is detected in the later period.

By WHO classification 15(65.2%) of participants involved in research adenocarcinoma or by cell secretion G_1-13(86.6%), G_2-1(6.7%), G_4-1(6.7%) was diagnosed. (Picture2)



	Number	percentage (%)	Number	percentage (%)
	Histological diagnose		Immunohistological diagnose	
G1	13	86.60%		
G2	1	6.60%	8	50%
G3			8	50%
G4	1	6.60%		

Figure2. Histological classification of cell secreting grade of colorectal carcinoma

From immunohistochemical result p53 marker revealed 25% negative, 25% medium positive and in 50% strong positive. In adenoma medium positive 2(28.5%), strong positive reaction by 5(71.4%). Ki67 marker 25% strong positive, 69% with medium positive activization.(Figure 5 and 6) In adenoma medium and strong positive condition occupied most percentage.

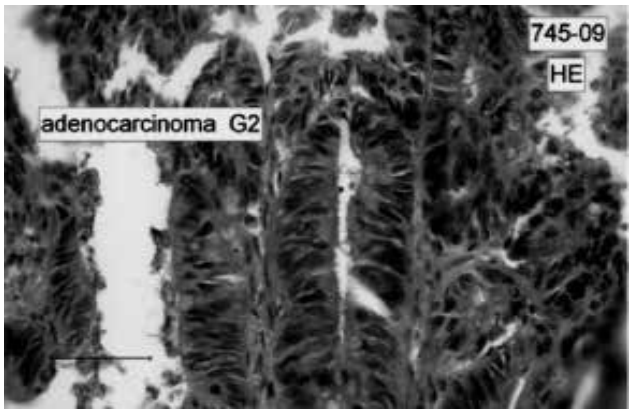
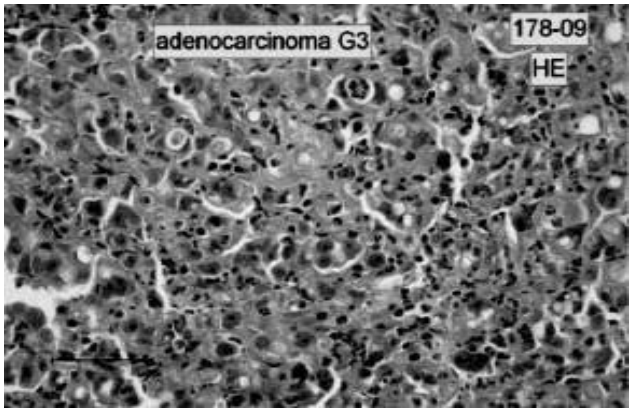


Figure3 Patient B.M 65years.
Biopsy 745 / 09.magnification 10 x 20.
Histo/diag: Adenocarcinoma G2.



Figuire4. Patient S.B 48years old. Female.
Biopsy 178 / 09. magnification 10 x 10.
Histo/diag: Adenocarcinoma G3

CK20 marker was diagnosed in 75% medium and strong positive (Picture6) CK7 marker in 93.7% negative and in 1 case it revealed positive by positive reaction. CK18 was tested as positive control. Even in 1 case research negative didn't appear, all revealed 100%.

DISCUSSION

Adenoma adenocarcinoma form and develops for a long period by many stages [8, 9] nowadays it is more accepted. It is possible to study the order of this development stage of carcinoma by Immunohistochemical method therefore we studied certain number of cancer in our research besides 23 case of colorectal carcinoma, in 5 case retain of adenoma was detected, this occupies 31.3% in 3 case in the left side, in 2 case it was located in the right side it remained. In these adenomas of high grade revealed in the epithelium (IEN). Their mean age was higher than the mean age of adenocarcinoma without adenoma. Therefore perhaps long period is required when adenoma develops as an adenocarcinoma.[10] Therefore colorectal carcinoma which had adenoma before is diagnosed later than colorectal carcinoma without adenoma.[11] In our research there were few adenoma without carcinoma or adenocarcinoma. It occupied 30.4% of total case.(n=7). We did some

commentary about mean age was 60.6. Large adenoma was located in mostly in the right side, little adenoma was located in the left side.[12,13] Those were diagnosed by prophylactic examination and endoscope. In few case epithelium tissue of adenoma surface was hurt and hemorrhage appeared, we detected it. By the analyze which was done in 57 material cut by surgical method in 25/57 (44%) p53 negative, in 32/57 (66%) in was revealed by positive reaction. Nucleus change of 32/57(56%) wich positive reaction in 17/25 (66%), cytoplasm reaction in 2/25(8%) nucleus and cytoplasm change revealed in 6/25(24%) by our study from 23 case in 12/23(75%) positive in 4/23(25%)negative, cytoplasm reaction marker CK18 was positive in all case, cytokeratin in CK2012/23(75%), activization was high. Location of carcinoma occurred in rectus 46/57(81%), in anus 3/57(6%), in all intestine 8/57(14%) by our research in rectus 9/23(37%), in sigma 8/57(14%) in the rest cases were diagnosed in other part of intestine. By histological diagnose hyperplastic polyps(HPs) with exceeding growth was 1/57(2%) adenoma 22/57(39%), adenoma with in situ 16/57(28%), adenocarcinoma 4/57(7%), infiltrative carcinoma14/57(25%), by our research adenoma 7/23(30.4%), carcinoma in situ 5/23(21.7%), adenocarcinoma 16/23(69.6%), infiltrative carcinoma was diagnosed by 6/23(26.1%).

Among our non-selected cases we analyzed 17 colorectal carcinoma, 14 as surgical and 3 as biopsy specimens. Nearly all CRC (Colorectal cancer) were in advanced stage (pT3) and of middle malignancy (G2). By staining with positive and negative markers we found in 13 carcinomas the expected results, agreeing with CRC in other countries. In 2 cases we found two different carcinomas, a predominant carcinoma with regular staining results and a remarkably smaller (relation estimated 1:50) second carcinoma with positive staining of CA125 and negative staining of CD X2. Staining of CK7 was negative and staining of CK20 was positive in both carcinomas. CK18, CEA, P53 and Ki-67 showed no differences. With conventional staining methods the second carcinoma demonstrated another type of structures and another type of cells. In 2 further cases we have found tumor cells of the same type in a certain part of the primary carcinoma, but not forming a cohesive tumor tissue. Analyzing CRC in Mongolia however we had an unusual caseload. Common features of our cases were a middle grade of malignancy and an advanced stage (it means longstanding) of the disease. It can be assumed that the predominating carcinoma was the first and that the smaller carcinoma developed later during the long course of the primary disease.

In this situation our finding of a "carcinoma in carcinoma" may not be a matter of chance. Perhaps it is a sigh that the long pathway from hyper proliferative colonic epithelium via different types of adenomas to an invasive carcinoma has not yet come to an end. When this pathway has arrived at an advanced stage of atubulo-papillary CRC with G2 malignancy there seems to be possible a further progress towards a carcinoma with higher malignancy which has lost typical markers of CRC. The number of 2 respectively 4 cases out of our small amount of 17 non-selected cases of CRC in Mongolia makes it probable that CRC with harbored carcinoma might be no rare event. Our observation should stimulate further investigations of this phenomenon. It may be useful to know the existence of second different type of adenocarcinoma in an otherwise typical CRC because of the progress of chemotherapy of this disease during the last decennium.

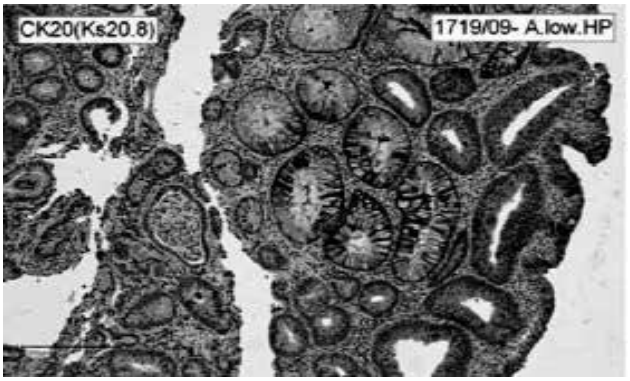


Figure5. Patient M.N 73years old.
Biopsy 208/08.magnification 10x20.
Immunohisto/diag: Adenocarcinoma

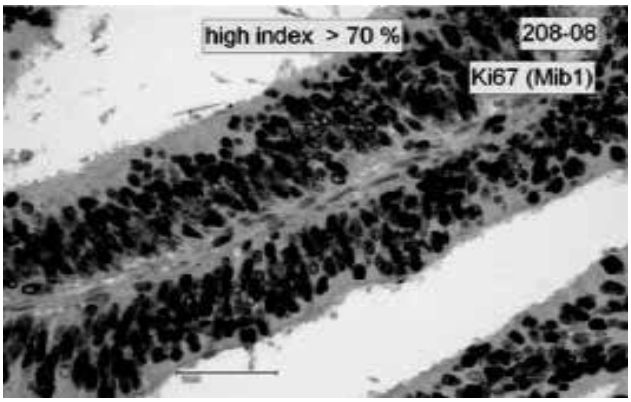


Figure6. Patient B.G 43years old. Female.
Biopsy1719/09.magnification10x10.
G2.Immunohisto/diag: Adenoma low grade.

CONCLUSION

1. In 88% of colorectal carcinoma case adenocarcinoma was diagnosed.
2. Cases involved in the research was diagnosed in pT stage or in later period, in the period of cell G_2 or with medium secretion.
3. Carcinoma p53 marker -medium, -strong positive 50%, Ki marker medium positive revealed in 70%, it shoros that carcinoma pathogenic abiloty of microorganosm has high speed. Colorectal carcinoma selective marker CK20 medium and strong positive reaction revealed, occupied 75%, it shows that primary carcinoma with heredity reason.

RESEARCH

1. To take differential diagnose histological form of colorectal cancer stage
2. To determine degree and of cancer cell secretion
3. To define immunohystochemical marker in cancer cell (tissue)
4. To give assessment (evaluation) in immunohistochemical marker and in cancer cell (tissue)

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Traditional therapeutic treatment method of lumbar disc herniation (ldh)

Altanchimeg S[1]*, Munkhtulga L[2], Tserendagva D[2]
[1] Inner Mongolia University for The Nationalities, Inner Mongolia, China
[2] School of Health Technology, HSUM, Mongolia

ABSTRACT

Lumbar disc herniation (LDH) is frequently occurring chronic disease, which is due to degeneration, overload of vertebral movement and trauma[4]. If Lumbar disc's big hernia is either on the lateral side or lateral posterior side, compression syndrome may occur such as radiculopathy, radiculoishemia, radiculomyeloishemia, myeloishemia, myolopathy and its treatment and diagnosis is still remains hard problem that needs to be solved[4]. The aim of this study was to treat LDH with some therapeutic methods of traditional medicine and to evaluate evidence based results. In our study totally 105 people were attended. We divided into 3 groups, which are cupping with needle pricking, warm needling and Chinese acupuncture and each group has 35 attendees. Average age of attendees was 38.7 (CX 6.58), mean age was 39.0 and the youngest was 25 years old, the oldest was 50 years old. In 3 groups, there was no statistical difference in our attendee's age (p=0.176). 59 (56.2%) of attendees were male and 46 (43.8%) were female.

Key words: Chinese acupuncture, pricking of blood, warm needling, lumbar disc herniation.

INTRODUCTION

Oriental Medicine and it is physical therapy method is very first art and spiritual intelligence heritage of Medical Science[1].

Mongolians have implanted and invented many different physical therapy methods of traditional medicine, which takes big part in world's medical science, and researchers have approved it by historical, archeological findings[2].

Bloodletting treatment, which lets out cause of disease from inside of the body, cauterization for cold disease that originated from North, acuclosure-traditional therapy method for brain concussion, bone setting, Lunreg Dandar's 5 spring, cupping with needle pricking and warm needling are all originated and invented from Mongolia which all intelligence work and creation of Mongolians[3].

In Clinical medicine, any kind of alteration of column and because of its becoming pathogenesis of diseases (hernia, spinobifidia, neuralgia) such as myofascia pain syndrome, fibromyoalgia does often occurs in population and internal medicine doctor, surgeon or general practitioners should help for those people instead of neurologist [4, 5].

Lumbar disc herniation (LDH) is frequently occurring chronic disease, which is due to degeneration, overload of vertebral movement and trauma[4].

If Lumbar disc's big hernia is either on the lateral side or lateral posterior side, compression syndrome may occur such as radiculopathy, radiculoishemia, radiculomyeloishemia, myeloishemia, myolopathy and its treatment and diagnosis is still remains hard problem that needs to be solved[4].

Lumbar pain prevalence is 5% is in L_4-L_5, 35% is in L_5-S_1, 16% is in L_4-L_5 and L_5-S_1 [4].

This study aimed to determine cause of Lumbar pain with scientific evidence and to ease local inflammation, decrease acute pain, to laxate muscle contraction, block-out the pain trigger points, adrenalize local circulation system by cupping with needle pricking and to define its effect with evidence based research.

In the otherhand, to find effect of Warm needling therapy that is "would relieve from Badgana, cold disorder and improve gas-blood circulation" and to prove its effects such as adrenalize local circulation system, pain relief, and muscle laxation with based on evidence. Also warm needling is used during long lasting, chronic disease and beside acupuncture effects it does have cauterization effect.

Character of Chinese acupuncture is effective in both hot and cold disorders. Therefore, to determine its effects, which are decrease acute pain, laxation of muscle contraction and improvement of blood circulation based on evidence.

Although, to evaluate evidence based result of the Cupping with needle pricking, warm needling, Chinese acupuncture's effect on LDH's some clinical pathogenesis and safety of therapy treatment.

MATERIALS AND METHODS

Study design

We have used a cross-sectional study design.

Study group and collection

Total 105 people, who are age between 20-50, diagnosed with "Lumbar Disc Herniation" by traditional medicine and neuroimaging were chosen in our study. 59 males, 46 females were attended in our study.

***Corresponding author:**
Altanchimeg S,
Inner Mongolia University for The Nationalities,
Inner Mongolia,
China

2.1. Criteria of minimization of attendees

1. Patient with different diagnose
2. Patients with spinal cancer, spinal tuberculosis, spinal osteoporosis, 2/3 of spinal cord is with stenosis and with spinal displacement
3. Patients with Acute LDH (6mm up above from lateral square of spine)
4. Patients with Spinal tail's neuropathy
5. Patients with Heart, brain, kidney and blood circulation system's primary acute disorder/disease and with mental illness.
6. Pregnant or breast feeding women

2.2. Patients with below criteria were minimized during the study

1. Patients with finance problem which cannot pay for required tests
2. Patients who lost consciousness while acupuncture
3. Patients who has been absent or missed treatment
4. Patients who have diagnosed any other disease during treatment

3. Materials and equipments

A. Survey card

1. Survey to evaluate backache (survey for evaluate movement restriction RMQ)
2. Survey of pain range, lower extremities muscle stiffness and quantitative criteria (evaluation card PRI and VAS)
3. Survey to evaluate therapy treatment (clinical guidance JOA)

B. Diagnostic criteria of Traditional Medicine

1. 4 bureau of differentiation of hot and cold disorder

C. Neuroimaging methods

1. Computer tomography (CT)
2. Magnetic resonance imaging (MRI)
3. Measurement of muscle pain trigger point (algometry)

D. Therapy Method

1. Cupping with needle pricking
2. Warm needling
3. Chinese acupuncture

Survey Method

1. Ronald Morris's questionnaire (RMQ)
2. McGill's pain questionnaire (SF-MPQ)
3. Evaluation of pain range VAS
4. Evaluate therapy treatment's result with JOA

RESULT

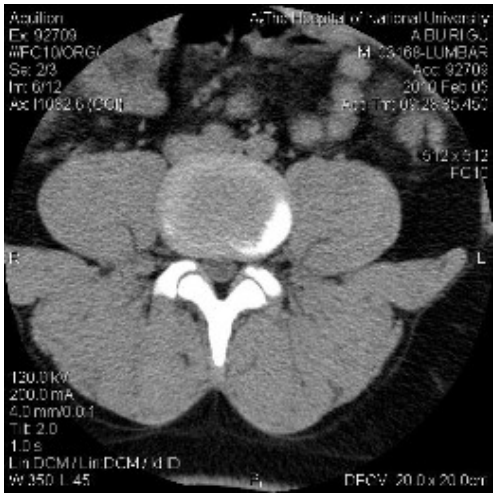
Comparison of cupping with needle pricking, warm needling and Chinese acupuncture's treatment results

1. Age, sex and workplaces of study attendees

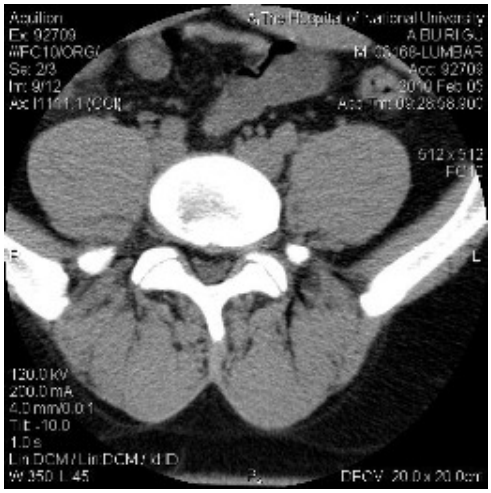
In our study totally 105 people were attended. We divided into 3 groups, which are cupping with needle pricking, warm needling and Chinese acupuncture and each group has 35 attendees. Average age of attendees was 38.7 (CX 6.58), mean age was 39.0 and the youngest was 25 years old, the oldest was 50 years old. In 3 groups, there was no statistical difference in our attendee's age (p=0.176). 59 (56.2%) of attendees were male and 46 (43.8%) were female.

2. Clinical study and treatment result

Diagnosed LDH by neuroimaging, showed below:

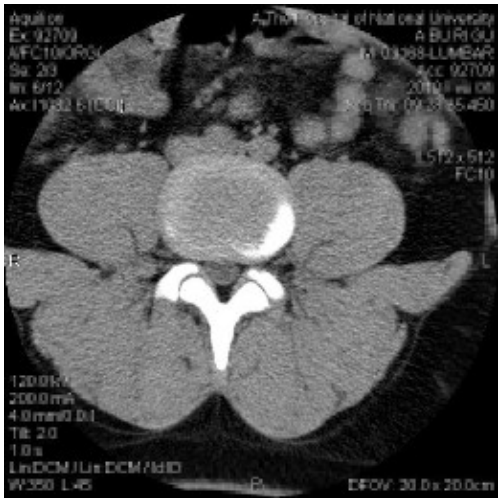


Picture 1. Level L4-L5

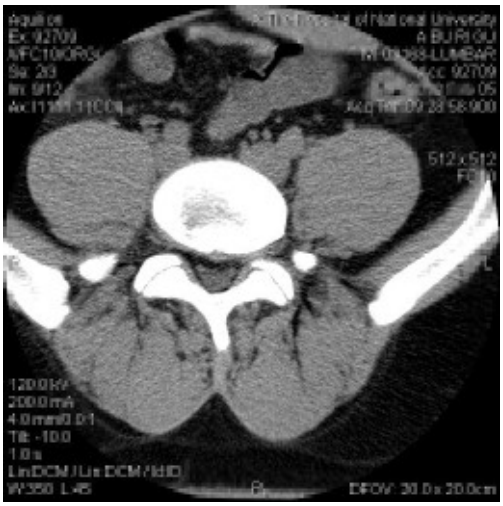


Level L5-S1

Before therapy



Picture 2. Level L_4-L_5



Level L_5-S_1
After therapy

We have done our research test by CT and MRI based on nucleus of the lumbar disc, cartilage ring, surface of the spinal cartilage, length of the disc, has spinal tail's neuropathy occurred or not, does disruption of fiber ring occurred or not, alteration of spinal radix, synovial membrane and muscle, articular cavity's regular or no, with stenosis or not. Once we found the pathological condition on spinal lumbar's level L_4-L_5, L_5-S_1, we have treated it with traditional therapy and haven't found any deformation. But in acute phase there was a sign of remission of inflammation.

3. Study result of duration of pain and its type

60% of all participants have suffered more than 6 months from back and leg pain. 21% of participants had suffered but no longer than 6 months and there was no recurrence. 71.4% of all participants who have treated with Chinese acupuncture, 54.3% of participants who have treated with cupping with needle pricking and warm needling were ones who have been suffered or still suffering from disease 6 months or more than 6 months.

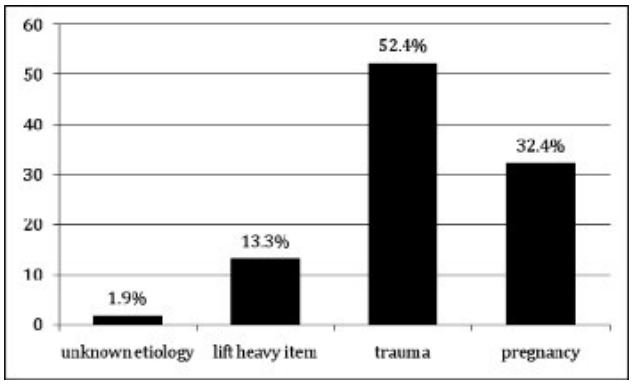


Figure 1. Cause of disorder (percentage)

Half of (52.4%) the attendees who have been treated did not know etiology of their disease. Most of the participants (32.4%) who knew their etiology were suffered because of carrying heave items that caused overload on vertebra, which had a heavy manual labor (figure 1).

4. Study result of pain type

All participants were suffering from both leg and back pain. But 56 (53.3%) of them were suffering more from back pain than leg pain, 49 (46.7%) of them were suffering more from leg pain than back pain. To find out which part/region of our participants body is having more pain, therefore we have divided into groups that are: back, waist, iliac, inguinal region, pedicle, ankle and foot. By the study, 9 out of 10 had pain around waist region, 8 out of 10 had pain around iliac.

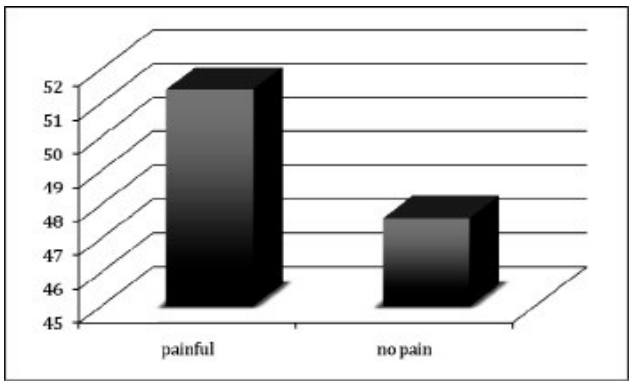


Figure 2. Pain location (percentage). **geminated count.*

1 out of 2 have said having pain around pedicle. Also 55.2% of participants had answered that their back hurts when they cough and 36.2% of participants had answered that their leg hurts when they cough.

24 people (22.9%) had muscular atrophy because of pain. 51.4% of all attendees had pain when they were tried to touch their chest with their chin (neck movement) while they were laying down looking up.

5. Study for determining lumbar disc location

Study of hyposcoliosis, movement restriction, abnormality of articular space by computer tomography in patients with LDH.

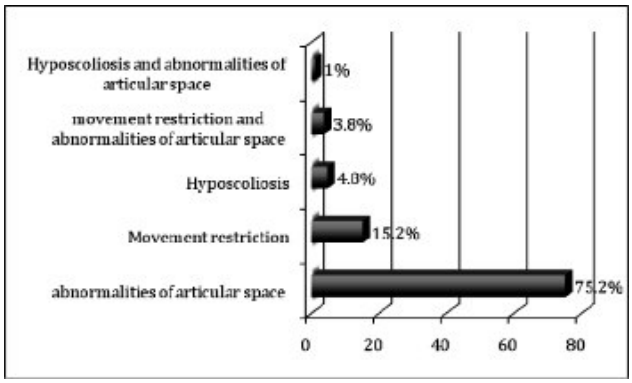
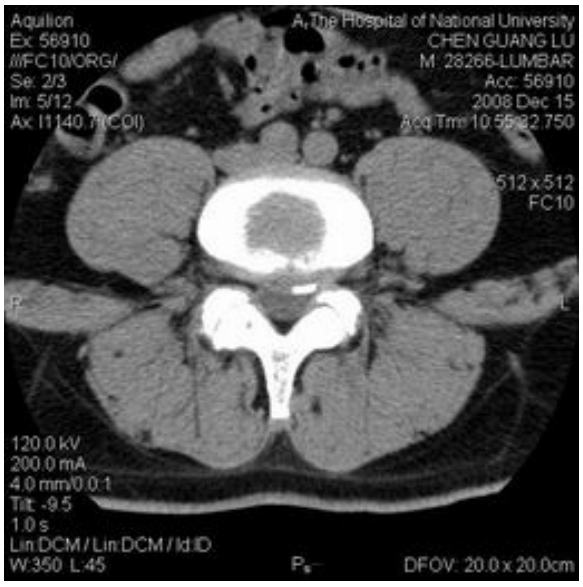
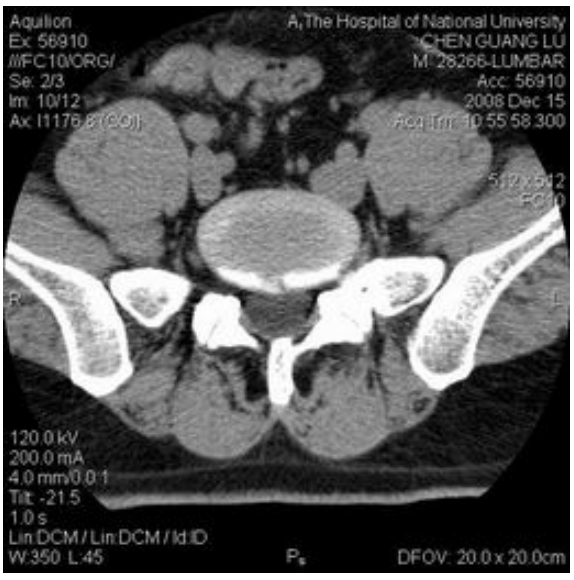


Figure 4. Vertebra and disc alteration, result of computer tomography (%)

62.9% of all participants had a vertebral hernia on one side after computer tomography test (figure 5).



(A)



(B)

Picture 3. (A). Lumbar Disc Hernia L_4-L_5 (B). On level L_5-S_1 hernia on left side by CT.

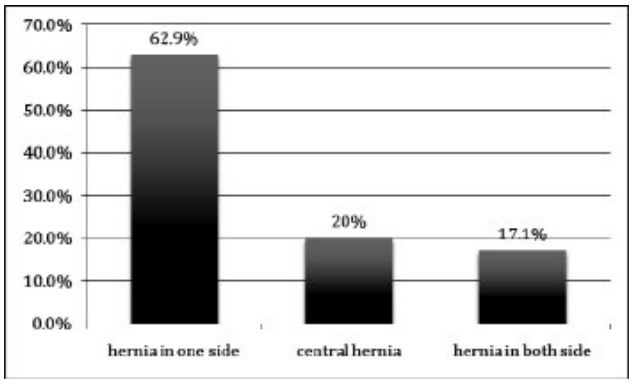


Figure 5. Study result of LDH type by CT (%)

Participants who have hernia on both side of vertebra is less (17.1%) than other type of hernia as it showed on Figure 5. In which level of vertebra LDH is located is showen in next picture.

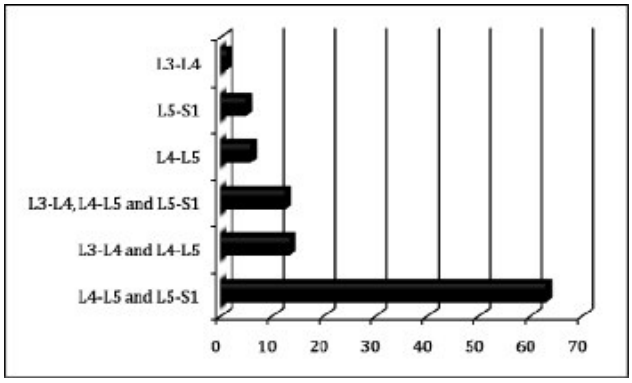


Figure 6. Study of level of LDH by CT (%)

On participants on level L4-S1 LDH found and the percentage was much higher than the other level which was 62.9% and on any level of vertebra with hernia was about to 11.4%.

In our study, most of the participants LDH was found more than one level, which was concurrence. Mostly it was on level L4-L5 and L5-S1.

If to show location of the hernia during this disorder by percentage (reminated count) on level L4-L5 is 94.3%, on level L5-S1 is 80% and level L3-L4 is 26.7% (figure 7).

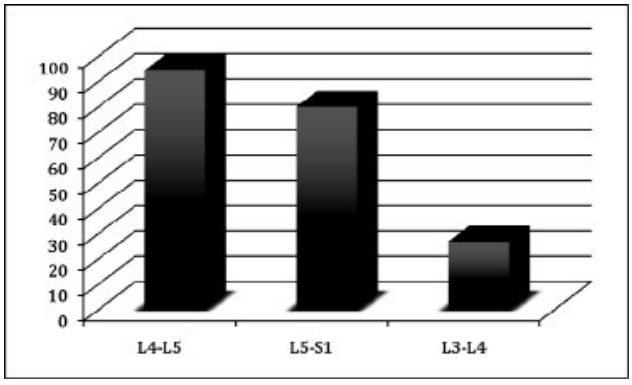


Figure 7. Location of LDH (%)

RESULTS OF THE TREATMENT OF LDH WITH CUPPING WITH NEEDLE PRICKING, WARM NEEDLING AND CHINESE ACUPUNCTURE

Table 1. Study of clinical result of hot disorder of lower extremity

		Chinese acupuncture						Cupping with needle pricking						Warm needling					
		First day		1 week		2 week		First day		1 week		2 week		First day		1 week		2 week	
		$\bar{x} \pm$ CX		$\bar{x} \pm$ CX		$\bar{x} \pm$ CX		$\bar{x} \pm$ CX		$\bar{x} \pm$ CX		$\bar{x} \pm$ CX		$\bar{x} \pm$ CX		$\bar{x} \pm$ CX		$\bar{x} \pm$ CX	
Body feature	Back pain	0.0	0.00	1.0	0.00	1.4	0.52	0.3	0.45	1.9	0.25	3.0	0.00	0.0	0.00	1.0	0.00	2.4	0.51
	Lower extremity pain (minchuurekh)	0.1	0.32	1.0	0.00	1.7	0.48	0.6	0.63	1.9	0.50	3.0	0.00	0.3	0.58	1.0	0.37	2.1	0.34
Physical examination	ability of walking	0.9	0.32	2.0	0.00	1.9	0.32	0.9	0.34	1.9	0.25	2.9	0.25	0.9	0.44	1.2	0.40	2.6	0.50
	lift a leg straight	0.2	0.42	1.0	0.00	1.0	0.47	0.0	0.00	1.8	0.45	2.1	0.25	0.0	0.00	1.0	0.00	1.6	0.50
	Feeling/sense	0.7	0.48	1.0	0.00	1.1	0.60	1.0	0.00	1.0	0.00	2.0	0.00	1.0	0.52	1.2	0.40	1.8	0.40
	muscle strength	1.2	0.79	2.0	0.00	2.0	0.00	1.9	0.25	2.0	0.00	2.0	0.00	1.5	0.63	1.9	0.34	2.0	0.00
Daily, normal life activities	tumbling during their sleep	0.1	0.32	1.0	0.00	0.7	0.48	0.2	0.40	1.0	0.00	2.0	0.00	0.1	0.25	1.0	0.00	1.9	0.34
	standing up	1.1	0.32	1.9	0.32	2.0	0.00	0.1	0.34	0.9	0.34	2.0	0.00	0.0	0.00	1.0	0.00	2.0	0.00
	Washing face	0.1	0.32	0.6	0.52	1.2	0.42	0.4	0.50	1.0	0.00	2.0	0.00	0.1	0.25	1.1	0.34	1.7	0.48
	benting their back	0.1	0.32	1.0	0.00	1.2	0.42	0.2	0.40	1.0	0.00	2.0	0.00	0.0	0.00	0.9	0.50	1.5	0.52
	sitting for long hours	0.1	0.33	1.0	0.00	0.9	0.32	1.0	0.00	1.2	0.40	1.5	0.52	1.0	0.00	1.0	0.00	1.8	0.40
	Lifting and holding heavy items	0.0	0.00	0.4	0.52	1.0	0.00	0.0	0.00	1.0	0.00	1.2	0.40	0.1	0.25	1.0	0.00	1.0	0.00
	walk and step	0.8	0.42	1.0	0.00	1.1	0.32	0.9	0.25	2.0	0.00	2.0	0.00	1.0	0.00	1.1	0.34	1.7	0.48

Table 2. Study of clinical result of cold disorder of lower extremity

		Chinese acupuncture						Cupping with needle pricking						Warm needling					
		First day		1 week		2 week		First day		1 week		2 week		First day		1 week		2 week	
		$\bar{x} \pm CX$		$\bar{x} \pm CX$		$\bar{x} \pm CX$		$\bar{x} \pm CX$		$\bar{x} \pm CX$		$\bar{x} \pm CX$		$\bar{x} \pm CX$		$\bar{x} \pm CX$		$\bar{x} \pm CX$	
Body feature	Back pain	0.2	0.41	1.1	0.33	1.6	0.64	0.4	0.50	1.1	0.23	3.0	0.00	0.1	0.23	1.0	0.00	3.0	0.00
	Lower extremity pain (minchuurekh)	0.0	0.20	1.1	0.44	2.0	0.20	0.3	0.45	1.1	0.23	2.4	0.50	0.0	0.00	1.1	0.23	3.0	0.00
	ability of walking	0.8	0.37	1.8	0.38	2.0	0.29	1.1	0.32	1.2	0.42	2.5	0.51	0.0	0.00	2.0	0.00	3.0	0.00
Physical examination	lift a leg straight	0.1	0.33	1.0	0.00	1.0	0.29	0.2	0.37	1.1	0.46	1.4	0.50	0.1	0.47	1.0	0.00	2.0	0.00
	Feeling/sense	0.8	0.44	1.0	0.00	1.1	0.34	1.0	0.33	1.1	0.32	2.0	0.00	0.7	0.45	1.6	0.50	2.0	0.00
	muscle strength	1.6	0.58	2.0	0.00	2.0	0.00	1.7	0.45	1.9	0.32	2.0	0.00	1.1	0.32	1.9	0.23	2.0	0.00
Daily, normal life activities	tumbling during their sleep	0.3	0.56	1.1	0.28	0.6	0.50	0.2	0.42	1.0	0.00	2.0	0.00	0.1	0.23	0.9	0.57	2.0	0.00
	standing up	0.8	0.37	1.9	0.28	2.0	0.00	0.2	0.42	0.2	0.42	2.0	0.00	0.0	0.00	1.0	0.00	2.0	0.00
	Washing face	0.1	0.28	0.5	0.51	1.2	0.44	0.5	0.51	1.0	0.00	1.5	0.51	0.1	0.32	1.0	0.00	2.0	0.00
	benting their back	0.1	0.33	0.9	0.28	1.1	0.33	0.1	0.32	0.1	0.32	1.1	0.32	0.0	0.00	0.6	0.50	1.5	0.51
	sitting for long hours	0.1	0.33	0.9	0.33	1.0	0.20	1.0	0.00	1.0	0.00	1.9	0.23	0.9	0.32	1.0	0.33	1.9	0.23
	Lifting and holding heavy items	0.0	0.20	0.4	0.49	1.2	0.37	0.1	0.32	1.0	0.00	1.3	0.45	0.0	0.00	1.0	0.00	1.4	0.51
	walk and step	0.9	0.44	1.0	0.00	1.3	0.54	1.0	0.00	1.9	0.23	2.0	0.00	1.0	0.00	1.4	0.50	2.0	0.00

DISCUSSION

Cupping with pricking is effective in treatment of acute lumbar disc herniation hot condition of the joint disease lower extremities. Warm needling is effective in treatment of chronic lumbar disc herniation (joint cold condition of the lower extremities). Chinese acupuncture can be used for certain stages of both hot and cold disorders.

CONCLUSIONS

1. Symptoms and complication of herniated lumbar disc on level L4-L5, L5-S1 were decreased by 75.6% among patients who treated with cupping with needle pricking and pain range decreased 44.4 units by Ronald Morris's questionnaire. Also by VAS evaluation the point that was 9.4 were decreased up to 1.23 after the treatment. Pain trigger point increased 5.6 times in level of waist-back, 4.2 times in level of iliac and curing/healing level by physical examination, daily, normal life activities, body feature 6.3% of all participants were cured, 93.8% of all participants condition got better. Cupping with needle pricking was effective in treatment of acute lumbar disc herniation (hot condition of the lower extremities joint disease).
2. Symptoms and complication of herniated lumbar disc on level L4-L5, L5-S1 were decreased by 61.9% among patients who treated with warm needling and pain range decreased 30.6 units by Ronald Morris's questionnaire. Also by VAS evaluation the point that was 9.4 were decreased up to 1.63 after the treatment. Warm needling was effective in treatment of chronic lumbar disc herniation (cold condition of the lower extremities joint disease).
3. Symptoms and complication of herniated lumbar disc on level L4-L5, L5-S1 were decreased by 43.5% among patients who treated with Chinese acupuncture and pain range decreased 20 units by Ronald Morris's questionnaire. Also by VAS evaluation the point that was 9.57 were decreased up to 1.20 after the treatment. Pain trigger point increased 3.5 times in level of waist-back and curing/healing level by physical examination, daily, normal life activities, body feature there was no such change in their condition, like curing/healing and got better. Chinese acupuncture is useful to use it on lumbar disc herniation's certain stages (in both cold and hot condition of the lower extremities joint disease).

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Diagnostic Significance of some Autoantibodies in Clinical Diagnostics of Autoimmune Diseases in Mongolian patients

Naranbaatar N*, Tsogtsaikhan S, Sarantsetseg B, Batbaatar G
Department of Microbiology and Immunology,
Health Sciences University of Mongolia

ABSTRACT

auto-antibodies are most widely used diagnostic tools for diagnosis and differential diagnosis of systemic autoimmune diseases in clinical practice. In this cross-sectional study, 140 patients aged from 18-72 years old (51 males and 89 females) with confirmed immune disorder pathologies, including 82 patients with rheumatoid arthritis (RA), 40 patients with systemic lupus erythematosus (SLE) and 18 patients with psoriatic arthritis (PA) were enrolled. 181 subjects without legend and current clinical and laboratory findings of systemic diseases attended as the control group. Determination of serum RF-IgM and anti-dsDNA titer were performed in all attendants using ELISA (Magiwell INC. USA). Titer of RF-IgM in range of 25-55IU/mL were found in 45.1% of patients with RA, in 25% of patients with SLE, in 38.9% of patients with PA and in 12.2% of healthy subjects, but higher titers (more than 55IU/mL) were found only in 45.1% of patients with RA while only 9.8% of patients with RA has demonstrated titers of RF-IgM in normal range (less tha 25IU/mL). Titers of anti-dsDNA with range of 25-40IU/mL were demonstrated in 24.4% of patients with RA, in 40% of patients with SLE, in 27.8% of patients with PA and only in 7.3% of healthy subjects. Only 9.8% of patients have shown titers of anti-dsDNA more than 40IU/mL, while 45% and 44.4% of patient with SLE and PA respectively and no healthy subject demonstrated a high level of the antibody. RF-IgM has shown higher sensitivity, specificity, PPV and NPV and better inter-rater agreement (k) for RA comparing with anti-dsDNA. However anti-dsDNA demonstrated higher sensitivity, specificity, PPV and NPV and better inter-rater agreement (k) for SLE and PA comparing with RF-IgM.. It was concluded that only high titer of RF-IgM for RA (k=0.74) and high titer of anti-dsDNA for SLE and PA (k=0.77 and k=0.67 respectively) may have diagnostic significance.

Key words: RF-IgM, anti-dsDNA, rheumatoid arthritis, systemic lupus erythematosus, psoriatic arthritis

INTRODUCTION

A number of autoantibodies are used in clinical practice for diagnosis, differential diagnosis and therapy monitoring of autoimmune diseases [1, 2].

Rheumatoid factor (RF-IgM) and anti-double stranded DNA (anti-dsDNA) autoantibodies are the most widely used diagnostic tools for diagnostics of systemic autoimmune diseases in clinical practice with their diagnostic importance for rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE) have been demonstrated previously [2-5]. There are no clinical studies that have established diagnostic significance for widely used autoantibodies in Mongolian patients with autoimmune disorders.

MATERIALS AND METHODS

A cross-sectional study design was used. 140 patients aged 18-72 years old (51 males and 120 females) with confirmed immune disorder pathologies, including 82 patients with rheumatoid arthritis (RA), 40 patients with systemic lupus erythematosus (SLE) and 18 patients with psoriatic arthritis (PA) were enrolled. All patients were diagnosed initially and then a specimen for autoantibody detection was collected before steroid therapy. Patients with circulatory, renal and allergic pathologies and patients with chronic infections such as TB, hepatitis B and C were excluded. 181 subjects without legend and current clinical and laboratory findings of systemic diseases and shown not to have acute or chronic inflammatory disease attended as control.

Determination of serum RF-IgM and anti-dsDNA titers were performed in all attendants using ELISA (Magiwell INC. USA) according to manufacturer's protocol.

Sensitivity, specificity, positive (PPV) and negative (NPV) predictive value of RF-IgM and anti-dsDNA were calculated for each certain pathology using binary classification test. Kohen's kappa coefficient (k) was calculated for determination of inter-rater agreement. Statistical processing of the collected data was performed using SPSS.10 software.

The Methods of this study were reviewed in the meeting of the Ethical Committee at Health Sciences University of

***Corresponding author:**
Department of Microbiology and Immunology,
Health Sciences University of Mongolia
Naranbaatar.N
E-mail: dogbileg@yahoo.com

Mongolia and concluded that the statement in the methods complied with the requirements of experiments on human subjects and were issued a resolution for permission.

RESULTS AND DISCUSSION.

The percentage of subjects with elevated autoantibody level in the study and control groups is illustrated in Table 1.

Table 1. Serum autoantibody level rates in patients with immune disorders (%)

Antibody	Range	RA	SLE	PA	Control
RF-IgM	25IU/ml >	9.8% (n=8)	75% (n=30)	61.1%(n=11)	87.8% (n=36)
	25-55IU/mL	45.1% (n=37)	25% (n=10)	38.9%(n=7)	12.2% (n=5)
	55IU/mL<	45.1% (n=37)	0%	0%	0%
anti-dsDNA	25IU/ml >	65.8% (n=54)	15% (n=6)	27.8% (n=5)	92.7% (n=38)
	25-40IU/ml	24.4% (n=20)	40% (n=16)	27.8% (n=5)	7.3% (n=3)
	40IU/ml<	9.8% (n=8)	45% (n=18)	44.4% (n=8)	0%

Titer of RF-IgM in range of 25-55IU/mL were found in 45.1% of patients with RA, in 25% of patients with SLE, in 38.9% of patients with PA and in 12.2% of healthy subjects, but higher titer (more than 55IU/mL) were found only in 45.1% of patients with RA while only 9.8% of patients with RA has demonstrated titer of RF-IgM in normal range (less than 25IU/mL). Titers of anti-dsDNA with range of 25-40IU/mL were demonstrated in 24.4% of patients with RA, in 40% of patients with SLE, in 27.8% of patients with PA and only in 7.3% of healthy subjects.Only 9.8% of patients have shown titer of anti-dsDNA more than 40IU/mL, while 45% and 44.4% of patient with SLE and PA respectively and no healthy subject demonstrated high level of the antibody.

Table 2 illustrated results of the calculation of sensitivity, specificity, positive (PPV) and negative (NPV) predictive value and kappa coefficient of RF-IgM and anti-dsDNA for immune disorder pathologies.

Titer of RF-IgM was elevated in 90.2% (in half of them were found high or more than 55IU/mL titer) of patients with RA. In contrast only in 25% of patients with SLE, in 38.9% of patients with PA and in 12.2% of healthy subjects were found to have elevated RF-IgM in range of 25-55IU/mL. Helliwell PS et al. (2007) observed an elevated RF-IgM titer in 274 (76%) of 363 patients with RA, and in 22 (6%) of 338 patients with PA and concluded that this antibody does not have a diagnostic importance for PA patients [6].

Titers of anti-dsDNA was elevated in 85% (in 45% high or more than 40IU/mL) of patients with SLE while only in 34.2% of patients with RA (in 9.8% with titers higher than40IU/ml) and 7.3% of healty subjects were found to have titers on the 25-40IU range 72.2% of patients with PA demonstrated an elevated anti-dsDNA level with 44.4% of them having titers higher than 40IU/ml

Table 2. Diagnostic significance of autoantibodies for immune disorder pathologies

	Antibody	Sensitivity	Specificity	PPV	NPV	êàððà
RA	RF-IgM	90.24%	87.8%	93.76%	81.81%	0.74
	ànti-dsDNA	34.14%	92.68%	90.32%	41.30%	0.20
SLE	RF-IgM	25%	87.8%	66.6%	54.5%	0.12
	ànti-dsDNA	85%	77.27%	91.89%	86.36%	0.77
PA	RF-IgM	38.9%	87.8%	58.3%	76.6%	0.29
	ànti-dsDNA	72.2%	92.7%	81.3%	88.4%	0.67

RF-IgM has shown higher sensitivity, specificity, PPV and NPV and better inter-rater agreement (k) for RA compared with anti-dsDNA. However anti-dsDNA demonstrated higher sensitivity, specificity, PPV and NPV and better inter-rater agreement (k) for SLE and PA comparing with RF-IgM. Yongjiang Sun et al. (2001) found an elevated anti-dsDNA in 90% of patients with SLE and strong correlation between antibody level and disease activity [4]. This study has established a high rate of specificity (90.24%) and sensitivity (87.8%) of RF-IgM for RA. Karl Egerer et al. (2009) demonstrated similar rate of sensitivity (80%) and specificity (95%) of RF-IgM for RA [7].

Conclusion. Titers of RF-IgM more than 55IU/mL for Rheumatoid arthritis (k=0.74) and titers of anti-dsDNA more than 40IU/mL for Systemic lupus erythematosus and Psoriatic arthritis (k=0.77 and k=0.67 respectively) may have diagnostic significance.

After used TF Classic and TF Advance daily for the 30

patients with RA, RF IgM titer was decreased from 47.3 IU/ mL to 33 IU/mL (30%). According to this study, TF may be used for the treatment of RA.

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Measuring technical efficiency through data envelopment analysis: an application to district health department of Ulaanbaatar

Gantugs Y*,Tseden P,Chimedsuren O,
Department of Health Policy and Management, School of Public Health,
Health Sciences University of Mongolia

ABSTRACT

Promoting public sector efficiency remains an important concern for many governments. Policy makers are increasingly interested in developing performance indicators that measure hospital efficiency. Lacking competitive pressures, traditionally it has been held that the public sector has little inherent incentive to practice efficient behavior. Increasing importance is being placed on measures of efficiency in hospitals to compare their relative performance given the need to ensure the best use of scarce resources. The objective of the study is to improve evidence-based health policy through measuring the efficiency of public district health departments in Mongolia. Public district health departments with inpatient care (N=6) were included in the study. The data envelopment analysis (DEA) technique was used to assess efficiency. The DEA model used three inputs and two outputs. Panel year data was used for the analysis. The (VRS) DEA models estimated for the period 2007 to 2010 indicated average technical efficiency scores ranging from 72% to 100% at the district health departments. This research is expected to help hospital management by providing information on the causes of hospital efficiency and indicating possible improvements in operation. Hospital benchmarking information is also available from the research results which show the experience of specific hospitals. The findings will be helpful for assessing the effectiveness of both national health policy and individual hospital management decisions in the long-term, which can contribute to health care management for future decision making.

Key words: district health department, technical efficiency, data envelopment analysis

INTRODUCTION

On the demand side of health care, Mongolia has many hospitals and hospital beds. One reason for inefficient operation patterns is the availability of many hospital beds and hospital staff that would otherwise be unoccupied in the absence of excessive rates of hospitalization. There should be ample opportunities for reducing the number of hospital beds and for consolidating services in a smaller number of general hospitals over time. The resulting savings could be used to finance much-needed improvements such as quality of care or to strengthen health services through the system. But from the supply side, in other words, from the hospitals' side, we need to measure and analyze the efficiency of the hospitals and to determine the factors of inefficiency.

In 2009, the secondary level health care providers were consumed 31.7% of total health spending. During the same period, funding to specialized centers (tertiary level) was 21.7%, *soum* hospitals and family practices consumed 23.6% of the total health expenditures. The largest amount of money was budgeted and spent on the provincial, district hospitals and health departments. Improving the efficiency of health service delivery is a challenging issue in Mongolia.

***Corresponding author:**
Gantugs Yundendorj
Department of Health Policy and Management,
School of Public Health, HSUM
Zorig street, Ulaanbaatar, Mongolia
E-mail: yugantugs@yahoo.com

MATERIALS AND METHODS

2.1 Measuring hospital efficiency with DEA

Data Envelopment Analysis (DEA) is a linear programming method which enables the measurement of efficiency consistent with the theoretically based concept of production efficiency. DEA typically examines the relationship between inputs to a production process (resources used in a hospital) and the outputs of that process (for example number of patients treated in hospitals). In other words, DEA examines the question: "By how much can the input be reduced without changing the output quantities".

DEA can be a powerful tool when used widely. A few of the characteristics that make it powerful are:

- DEA can handle multiple input and multiple output models;
- It does not require an assumption of a functional from relating inputs to outputs;
- Decision making units (DMU) are directly compared against a peer or combination of peers.

The same characteristics that make DEA a powerful tool can also create problems:

- Since DEA is an extreme point technique, noise (even symmetrical noise with a zero mean) such as measurement error can cause significant problems;

- DEA is good at estimating "relative" efficiency of DMU but it converges very slowly to "absolute" efficiency - it can tell us how you are doing compared to your peers but not compared to a "theoretical maximum";
- DEA is a nonparametric technique making statistical hypothesis tests difficult - the focus of ongoing research;
- Since a standard formulation of DEA creates a separate linear program for each DMU, large problems can be computationally intensive.

The best way to introduce DEA is via the *ratio* form. For each DMU we would like to obtain a measure of the ratio of all outputs over all inputs, such as $\mathbf{u}^{/}\mathbf{y}_i/\mathbf{v}^{/}\mathbf{x}_i$, where **u** is an **Mxl** vector of output weights and **v** is a **Kxl** vector of input weights. To select optimal weights we specify the mathematical programming problem: $\mathbf{max\ u,v}\ (\mathbf{u}^{/}\mathbf{y}_i/\mathbf{v}^{/}\mathbf{x}_i)$

subject to $(\mathbf{u}^{/}\mathbf{y}_j/\mathbf{v}^{/}\mathbf{x}_{j)\leq 1,}$ $\mathbf{j=1,2,\ldots,N,}$

$\mathbf{u, v\geq 0}$

This involves finding values for **u** and **v**, such that the efficiency measure of the i^{th} DMU is maximized, subject to the constraint that all efficiency measures must be less than or equal to one. One problem with this particular ratio formulation is that it has an infinite number of solutions. To avoid this one can impose the constraint $\mathbf{v}^{/}\mathbf{xi= 1}$, which provides:

$\mathbf{max\ \mu,v}\ (\mu^{/}\mathbf{y}_{i)}$

$\mathbf{subject\ to}\quad \mathbf{v}^{/}\mathbf{x}_i\mathbf{=1,}$

$\mu^{/}\mathbf{y}_j\mathbf{-}\ \mathbf{v}^{/}\mathbf{x}_j\mathbf{\leq 0, j=1, 2, ...,N}$

$\mu, v \geq 0,$

where the notation change from **u** and **v** to **μ** and **v** reflects the transformation. This form is known as the multiplier form of the linear programming problem. Using the duality in linear programming, one can derive an equivalent envelopment form of this problem:

$\mathbf{min}_{\theta,\lambda}\ \theta,$

$\mathbf{subject\ to}\ \ -\mathbf{y}_i\ \mathbf{+Y}\lambda\geq 0, \theta\mathbf{x}_i\mathbf{-\ X}\lambda\geq 0,$

$\lambda \geq 0,$

where θ is a scalar and λ is a Nxl vector of constants. This envelopment form involves fewer constraints than the multiplier form (K+M < N+l), and hence is generally the preferred form to solve. The value of θ obtained will be the efficiency score for the i^{th} DMU. It will satisfy $\theta \leq 1$, with a value of 1 indicating a point on the frontier and hence technically efficient DMU, according to the Farrell (1957) definition and the linear programming problem must be solved N times, once for each DMU in the sample. A value of θ is then obtained for each DMU.

The DEA weights provide particularly important about the implicit choices made by each hospital in order to appear as efficient as possible in relation to the others. Making the weight attachment process endogenous can thus lead to different input and output weights depending on which hospital is considered. This is one of the strengths of DEA but, at the same time, it is also one of its weaknesses. It is a strength because if a given hospital if found to be inefficient even when the most favorable weights are applied for measuring its efficiency, then there are reasonable grounds to classify it as inefficient. Despite the best weights being selected to maximize its efficiency, a score $e_j < 1$ indicates that a more efficient linear combination of other hospitals exists. It is a weakness because each hospital can obtain a high level of efficiency by choosing the most suitable weights. Hence the efficiency scores calculated for the various decision making units are not properly comparable as they derive from different weighting processes. In this way, however, outliers that focus on just one output (input) while neglecting the rest may appear to be efficient (O'Neill, 1999).

Public district health departments (N=6) were included in the study. Data envelopment analysis (DEA) technique was used to assess technical efficiency. The DEA model used three inputs and two outputs. Panel data for three financial years (2008, 2009 and 2010) was used for the analysis.

The measurement of efficiency in healthcare is a difficult exercise for various reasons including the complex nature of the productive process and difficulty in measuring the ideal output of the sector, i.e. improved health status.

Technical efficiency attempts to address two questions depending on whether it has input- or output-orientation. In output-oriented technical efficiency the focus is on expanding output quantities without changing the quantity of inputs used. Conversely, input-oriented technical efficiency focuses on reducing input quantities used without changing the quantity of outputs produced.

The performance of hospitals may be measured using ratios that mainly measure capacity utilization and frontier techniques founded on micro-economic theory of production. Commonly used ratios include: bed occupancy rate, turnover ratio, turnover interval and average length of stay. Frontier methods of efficiency measurement include linear programming techniques (e.g. data envelopment analysis) and econometric techniques (e.g. production and cost functions). The current study employs data envelopment analysis.

In DEA the efficiency of an organization is measured relative to a group's observed best practice. This implies that the benchmark against which to compare the efficiency of a particular hospital is determined by the group of hospitals in the study and not a value fixed by hospitals outside of the group.

The basic DEA model helps to find answers to the questions:

(i) Which district health departments are the most efficient?

(ii) If all public district health centers are to perform according to best practice (i.e. the efficient peer hospitals), by how much could inputs/resources be reduced to produce the current output levels?

DEA easily accommodates multiple inputs and outputs without the requirement for a common denominator of

measurement. This makes it particularly suitable for analyzing the efficiency of hospitals as they use multiple inputs to produce many outputs. Furthermore, it provides specific input and output targets that would make an inefficient hospital relatively efficient. It also identifies efficient peers for those hospitals that are not efficient. This helps the inefficient hospitals to emulate the functional organization of their peers so as to improve their efficiency.

However, like many other empirical methods, DEA has its limitations. First, it produces results that are sensitive to measurement error. For example, if one hospital's inputs are understated or its outputs overstated, it can become an outlier and significantly reduce the efficiency of other hospitals. Second, DEA measures efficiency relative to the best practice within hospitals in the particular sample. Therefore, it is not possible to compare how public district health departments in Mongolia perform to those in any other country.

The following three physical inputs were used:

- (i) Number of patient beds
- (ii) Number of physicians
- (iii) Number of nurses

The two outputs we considered were:

- (i) Number of inpatient stays
- (ii) Number of outpatient visits

The input–output variable selection in DEA is usually guided by expert opinion, past experience and economic theory and there are no diagnostic checks for model misspecification which is most serious when relevant variables are omitted rather than when irrelevant ones are included. Furthermore, in DEA it is typically required that the sample size is at least three times the number of variables used to characterize production. In our study, the relatively small sample forced us to adopt a simple production model, despite the availability of more detailed data. Because our objective is to measure technical efficiency, we designated as inputs each facility's medical and nursing staff as the main service providers and the number of beds to reflect the capacity to offer care. Two outputs were selected to reflect the overall responsibilities of the hospitals. The outputs were assumed to be non-discretionary, i.e. the hospitals have no control over the number of patients they treat. It is more appropriate to assume that they have control over the utilization of resources and therefore an input-oriented DEA model was adopted.

The technical efficiency scores were computed using the data envelopment analysis program Version 2.1 (DEAP 2.1) designed by Coelli.

RESULTS

The DEA models estimated for the period of 2008 to 2010 indicate average technical efficiency scores ranking from 0.72 to 1 at the district health department. A summary of the technical efficiency scores are given in Table 3.1.

Table. 1 Result of DEA Public District Health Department

[1]	Health Departments	2008	2009	2010
		TE	TE	TE
1	Bayngol	1	0.9	1
2	Songinokhairkhan	0.72	0.8	0.9
3	Chingeltei	0.84	1	1
4	Khan-Uul	0.8	0.9	0.9
5	Baganuur	1	0.85	1
6	Nalaikh	1	1	0.8
	Mean	0.89	0.90	0.93
	Max	1	1	1
	Min	0.72	0.8	0.8

Public district health departments' average TE scores were 0.89 in 2008 and increased to 0.93 in 2010. The maximum efficiency score was 1 this period and the minimum score was the 0.72 in 2008. (Table 3.2)

Table. 2 Descriptive statistic of Public District Health Department

Descriptive statistic	2008	2009	2010
	TE	TE	TE
Mean	0.89	0.90	0.93
SD	0.1	0.08	0.08
Median	0.92	0.9	0.95
Max	1	1	1
Min	0.72	0.8	0.8

Inefficiency levels ranging from 72–100% are observed. This implies that if the inefficient health departments were to operate as efficient as their peers on the best-practice frontier, the health system could have reaped efficiency gains amounting to 28% of the total resources used in running the health departments.

Again the results of this study indicate that some of the health departments operate at technical efficiency levels well below the efficient frontier. The inefficiency levels observed suggest a substantial amount of input savings, which could go a long way in injecting additional resources to the health system to address the backlog of inequities and/or further improve the quality of the available health care. In DEA, the frontier against which the technical efficiency of all health departments is measured is defined by those health departments in the group with a TE score of 100%. The health departments producing on the efficient frontier define the best practice and thus could be regarded as role models. For each inefficient health departments the DEA model has identified efficient health departments that could be used as comparators. The inefficient health departments are expected to learn from their efficient peers by observing their production process.

DISCUSSION

Valdmanis (1990) applied the data envelopment technique to the estimate technical inefficiency in two groups of hospitals in 1982, one representing 33 nonprofits and the other 8 public hospitals in Michigan. His measures indicated that the nonprofits achieved 86.6 percent of technically efficient use of inputs while the public hospitals performed better, achieving 98.5 percent or very near frontier efficiency.

Register and Bruning (1987) also applied the data envelopment method, in this case to a sample of U.S. hospitals including 300 nonprofits, 36 public, and 121 for-profit hospitals. These authors found a somewhat lower level of technical efficiency on average for the entire sample than did Valdmanis. Average efficiency for the Register and Bruning sample was 72.4 percent. These authors further found that there was no significant difference between hospitals by type of organization: nonprofits, for-profits, and government hospitals. They also found that competition levels, as measured by firm concentration ratios, had no significant effect on technical efficiency.

As Allen et al (1997) pointed out the flexibility of DEA may be brought into question when it is considered that the correct evaluation of the relative efficiency of hospitals may require the consideration of value judgments which can restrict the acceptable ranges of variation of the input and output weights. These ranges can vary according to the perspective of the analysis. At one extreme, a hospital management perspective can be adopted.

CONCLUSION

The analysis of efficiency in hospitals can make a major contribution to improving health services. The ultimate aim is to identify poorly performing hospitals, in this study we concentrated on these issue, and show how one can measure technical efficiency relative to best practice using DEA. It demonstrates how this may be applied in the context of the hospitals in Mongolia.

The DEA efficiency measures are not controlling for other factors such as the type of production process or other environment factors that are not included in the DEA. In this study, first we applied models that assume a similar environment or catchments area from which the hospitals drawn its patients. Nonetheless, this may not be the case in reality, and environmental differences are most probable. A topic for further research is to determine how environmental factors (e.g. control and skill of managers) may influence DEA efficiency scores.

Improved and more comprehensive quality measures would be extremely useful as physicians may very well argue they are less efficient (take longer with patients, have longer waiting lists and so on) because they are providing better patient care. Quality variables relating to patient outcomes such as successful operations, diagnoses, morbidity and mortality rates or QALYs gained would be very useful to include in such a study. Also it is important to identify types of inefficiency, for example at hospital management level (for internal efficiency) or at the health care planning authority level (for external efficiency).

Better data in this respect will add a great deal to the understanding of productivity and efficiency over time and will further help to validate the results found in this study.

This research is expected to help hospital management by providing information on the causes of hospital efficiency and indicating possible improvements in operation. Hospital benchmarking information is also available from the research results which show the experience of specific hospitals. The findings will be helpful for assessing the effectiveness of both national health policy and individual hospital management decisions in the long-term, which can contribute to health care management for future decision making.

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The present situation of tuberculosis service delivery at family group practices in Ulaanbaatar

Nandin-Erdene.O*, Batzorig.B, Davaalkham.D
Department of Epidemiology and Biostatistics
School of Public health
Health Sciences University of Mongolia

ABSTRACT

The World Health Organization reports that in 2009, 9.4 million new cases of TB were registered worldwide and 3.3 million of them being women and 1.1 million were the people with HIV infection. Six TB dispensaries and 34 Family Group Practice's (participation rate is 100%) from 6 districts' participated in the survey. Out of 34 Family Group Practice's, 20 (58.8%) Family Group Practice's transported the sputum samples and the remaining 14 (41.2%) did not transport the sputum samples. In total, 68 family doctors and nurses were participated in the survey. Twenty six (76.5%) FGPs from the thirty four surveyed Family Group Practice's released their annual activity reports of 2010. The remaining eight Family Group Practice's did not have reports or did not share the reports saying that the reports were archived. Out of 34 chosen Family Group Practice's, an observation on collecting, storing and transporting the sputum samples was done at 20 (58.8%) Family Group Practice's that provide this kind of services. From the surveyed nurses, 79.4% attended TB training and remaining 20.6% did not attend training. The TB training attendance rate was 97% among family doctors and 79.4% among nurses. However, Knowledge, Attitude Practice on TB were different among the family doctors and nurses. Knowledge on the way of TB transmission, types of TB, clinical signs and symptoms, preventative methods were satisfactory.

Key words: Tuberculosis (TB), TB care, service delivery, detection,

INTRODUCTION

The World Health Organization reports that in 2009, 9.4 million new cases of TB were registered worldwide and 3.3 million of them being women and 1.1 million were people with HIV infection. Every year, 1.7 million people die as a result of TB. In other words, 4700 people die every day, and every hour, 200 people die because of TB.[1] The current high rate of TB morbidity and mortality is considered to be one of the emerging issues of Mongolian health sector. Tuberculosis is 6th leading cause of death in the Mongolian population. In 2010, 4213 new cases were registered, 1873 cases being pulmonary, an infectious type of TB. 54.7 % of all new TB cases were registered in UB.[2] Within the worldwide action to combat TB, nations aim to detect 70% of new smear-positive TB cases and cure 85% of the detected cases. As per the health statistics of 2010, the detection rate of new smear-positive TB cases was 74.1% while the cure rate was 84.2% in Mongolia. Government and international organizations are taking various actions/measures to eliminate TB in Mongolia. Since 2008, many activities such as an early detection of suspected TB cases at Family Group Practice's in Ulaanbaatar, referral of suspected cases to district TB dispensary, transporting sputum samples, implementation of Directly Observed Treatment Short-Course program at Family Group Practice's in remote areas, conducting Information Education and Communication activities for the general public, filling out approved registration and monitoring forms, and developing consolidated TB service report were being implemented by stages within the support of the project "Eliminating TB prevalence and mortality through improved quality of the health care service delivery", funded by Global fund.[3]

The survey goal is to develop recommendations to improve and refine TB service delivery through learning current situation of TB service delivery at Family Group Practice's s in Ulaanbaatar.

MATERIALS AND METHODS

A retrospective descriptive method was employed to study TB service delivery at Family Group Practice's in Ulaanbaatar using the consolidated report on the TB care while family doctors' and nurses' knowledge, attitude and practices on TB were studied through cross sectional method. In total, 34 Family Group Practice's operating in Ulaanbaatar were chosen randomly in consideration of their capability to represent the Ulaanbaatar city Family Group Practice's. Statistical analysis was done by 'SPSS -17.0' program and the differences between indicators were distinguished.

***Corresponding author:**
Oyunbileg Nandin-Erdene
Department of Epidemiology and Biostatistics
Health Sciences University of Mongolia
Zorig Street 3, Sukhbaatar district
E-mail: nani_erdem@yahoo.com

RESULTS:

Six TB dispensaries and 34 Family Group Practice's (participation rate is 100%) from 6 districts were participated in the survey. Out of 34 Family Group Practice's, 20 (58.8%) Family Group Practice's transported the sputum samples and the remaining 14 (41.2%) did not transport the sputum samples. In total, 68 family doctors and nurses were participated in the survey. Twenty six (76.5%) Family Group Practice's from all thirty four surveyed Family Group Practice's released their annual activity reports of 2010. The remaining eight Family Group Practice's did not have reports or did not share the reports saying that the reports were archived. This shows that reporting of the TB service delivery was not at adequate level in some Family Group Practice's. Within the Global fund's project, TB service delivery has been implemented at Family Group Practice's since 2007. However, the most of the Family Group Practice's have been implementing the project since 2009 or even 2010. Consequently, the most of the Family Group Practice's started to report TB service delivery from 2010, and the reports found by the survey were only 2010 reports.

Table 1. Consolidated report of TB service delivery at the FGPs and the report timeline

List of the districts	Number of chosen FGPs	The year started to implement the DOTS program	The year started to report TB service delivery	Number of FGPs that report TB service delivery	Number of FGPs that had reports	Number of reports
Songino-Khairkhan	6	2009-2010	2010	6	6	1(2010)
Bayangol	6	2009-2010	2009-2010	6	5	1(2010)
Khan-Uul	3	2010	2010	3	1	1(2010)
Bayanzurkh	7	2010	2010	7	4	1(2010)
Sukhbaatar	6	2010	2010	6	5	1(2010)
Chingeltei	6	2010	2010	6	5	1(2010)
Total	34	2009-2010	2009-2010	34	26	1(2010)

60% of the trained nurses collected sputum samples away from other people in compliance with the guideline, while the remaining 40% of the nurses did not follow this guideline. The majority or 95% of the nurses collected the samples in disposable specimen container with tight-fitting cap. An observation whether nurses uncap the specimen container and give it to the persons found that 70% of the nurses followed the guideline and the remaining 30% did not follow. 95% of nurses were standing behind the person. This shows that the nurses followed the methodology quite well. Among the nurses who did not attend TB training, following the guideline to collect samples in distance from other persons was not good, while among the trained nurses, uncapping the specimen container was followed inadequately.

Table 2. A sputum sample collection from the suspected TB cases

Methodology	Total		Untrained nurses		Trained nurse		P value
	n	%	n	%	n	%	
Collecting samples in distance from other persons							0.109
Yes	12	60	1	20	11	73.3	
No	8	40	4	80	4	26.7	
Use of disposable container with tight-fitting cap							0.554
Yes	19	95	5	100	14	93.3	
No	1	5	0	0	1	6.7	
Uncapping the specimen container by nurses							
Yes	14	70	4	80	10	66.7	0.573
No	6	30	1	20	5	33.3	
Staying behind the patients							0.554
Yes	19	95	5	100	14	93.3	
No	1	5	0	0	1	6.7	

The survey found that TB training attendance was higher among doctors compare to nurses: 97% of the doctors and 79.4% of the nurses attended TB trainings.

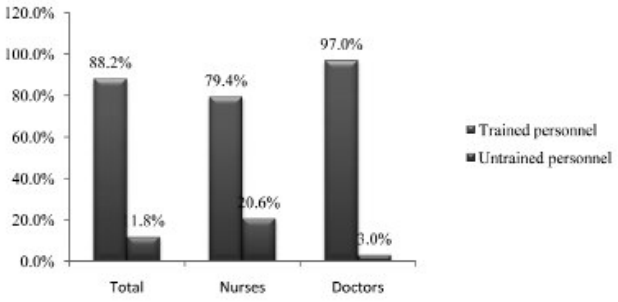

Figure 1. *Training attendance status of the survey participants*

X ray and cytology are the most suitable diagnostic methods for non-pulmonary TB. However, only 38.5% of the survey participants identified X ray and 46.2% identified cytology as the most suitable diagnostic methods for non-pulmonary TB. This shows that the knowledge on diagnostic methods for non-pulmonary TB was not satisfactory among family doctors and nurses.

Table 3. The most appropriate methods of diagnosing non-pulmonary TB

Indicators	Total		Doctors		Nurses		P value
	n	%	n	%	n	%	
Sputum smear test	14	21.5	8	24.2	6	18.8	0.765
X ray	25	38.5	14	42.4	11	34.4	0.615
Tuberculin skin test	37	56.9	22	66.7	15	46.9	0.144
Mycobacteriology	23	35.4	16	48.5	7	21.9	0.039
Cytology	30	46.2	16	48.5	14	43.8	0.807
Molecular biology method	10	15.4	6	18.2	4	12.5	0.734
Immunology method	9	13.8	5	15.2	4	12.5	0.72
Blood and urine test	5	7.7	3	9.1	2	6.3	0.642
Ultrasonography	13	20.0	7	21.2	6	18.8	0.758
Do not know	1	1.5	0	.0	1	3.1	0.614
Total	65	100.0	33	100.0	32	100.0	-

DISCUSSION

The evidence of fighting against tuberculosis worldwide can be observed from a number of researches conducted in many countries all around the world.[4,5,6,7,8]

Results of knowledge, attitude and practice survey of general public in regard to tuberculosis revealed that 61.8 percent of people think that they would get infected by this disease via respiratory tract, while 56.6 percent by sharing food with infected people, 27.3 percent by shaking hands of sick person and 26.8 percent thought that this disease spread by blood.[7]

Our study showed that 85.3 percent of doctors and 94.1 percent of nurses think that infection is spread by an infected person sneezing or coughing, and 19.1 percent think that this is an airborne disease. This shows that the level of knowledge regarding this disease is high.

The study conducted in 1993 in Korea, among general practitioners who practice in private entities, investigated knowledge, attitude, and practice regarding prevention and treatment of tuberculosis. Results of this study showed that 49 percent of survey participants do not consider tuberculosis as a critical issue for their country.[5]

Results of our study showed that 70.1 percent of doctors and 60.6 percent of nurses who participated in survey, think that tuberculosis is a very dangerous disease. Moreover, 95.5 percent of doctors and 97 percent of nurses considered tuberculosis as a critical issue for our country. This conclusion could be related to the situation of morbidity, mortality, diagnosis, and treatment of tuberculosis in our country.

In Peru in 1990, 24,023 TB positive tests were detected from 210,905 sputum smear tests. In 1993 602,000 TB tests were obtained from 332,000 people, and 35,646 of them were positive. In a year 1999, 1,938,201 tests were obtained from 1,085,749 people, of those, 24,511 cases were TB positive.[8]

Starting from 2008 in Mongolia, the project on strengthening capacity of soum hospital laboratories implemented in 68 soum hospitals of 11 aimags located in Khangai, Central, and Eastern regions, and, in 2010 the expansion of the sample transportation system took place. Our survey aimed to evaluate the progress in implementation of this project as well as detect challenges faced during implementation and develop practical suggestions on future actions.

During this evaluation we have obtained smear samples from 63 percent of all 1711 TB cases detected in a period of 2008-2010 in the 34 soums covered by the project.[9]

CONCLUSIONS

In the surveyed Family Group Practice's, one TB case was confirmed from 15 suspected cases and 136 TB patient were administered DOTS.

An adherence of the methodologies like checking the sputum and its amount, was good, while collecting samples away from other people and giving instructions in the cases when sputum was not odtained, were not adequate.

Family doctors' and nurses' knowledge on TB treatment, evaluation of the recovery status, and preventative treatment for latent TB were not adequate.

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Study of preparing new drug formulation from Cacalia hastata L

Jambaninj D[1]*, Davaasuren Ts[1], Erdenetsetseg G[1],
Baasanjargal N[2], Dungerdorj D[1]
[1]School of Pharmacy, Health Sciences University of Mongolia
[2] Medical College of Gobi-Altai, Health Sciences University of Mongolia

ABSTACT

In Mongolia, the most drugs are imported which are used for wound healing. It is required to develop drug formulation and increase local preparations substituting the import preparations such as those useful for the treatment of wound healing. For the purpose of solving the above problems we aimed to prepare new drug formulation from *Cacalia hastata* L. for the treatment of wound healing. *Cacalia hastata* L. is a medicinal plant, member of the family *Asteraceae*. *Cacalia hastata* L. is widely used for the Mongolian traditional medicine to treat wound healing, gastric ulcer, poisoning fever, liver fever, bile fever, oral cavity and gynecological diseases. We prepared thick extract from *Cacalia hastata* L. Optimal solvent, extraction method and particles of raw materials of medicinal plant was selected for developing extraction process of preparing thick extract. For the development of appropriate composition prepared gel formulation from sem-solid extract using various excipients such as gel former, solvent, pH adjuster, preserver and humectant. Gel formulation from *Cacalia hastata* L. was standardized by such criteria, as the amount of biologically active compound, appearance (color, smell), pH, viscosity and bacterial contamination. From the results of the studies established the suitable gel base for *Cacalia hastata* L. Stability testing of gel formulation from *Cacalia hastata* L. was studied by long term method. The quality of the gel from *Cacalia hastata* L., which was stored in room temperature(25°C ± 2°C/60% RH ± 5% RH), its appearance, viscosity, amount of biological active compound were stable. The stability testing of the gel formulation from *Cacalia hastata* L., is continued.

Key words: *Cacalia hastata* L., Carbomer(Carbopol 934), Sodium carboxymethylcelulose, Gel.

INTRODUCTION

Today, the vital problem of Health care is to supply population with high effective medicine with no adverse reaction. Nowadays, the world attitude is focused on the use of pure natural, herbal and animal preparation rather than synthetic preparation.[1]

In Mongolia, the most drugs are imported which are used for wound healing. It is required to develop drug formulation and increase local preparations substituting the import preparations such as those useful for the treatment of wound healing.[2]

Cacalia hastata L. is a member of the family *Asteraceae*. This medicinal plant grows in botanical and geographical provinces such as Khangai, Khentii, Khuvsgul and Mongol Daguur in Mongolia.[3,4] *Cacalia hastata* L. has pyrrolizidine alkaloids: hastacine up to 0.1%, platyphylline; total carotinoids up to 310 mg%, organic acid up to 13%, ascorbic acid, polysaccharide, flavanoids, phenolic acid, tannin, coumarin and triterpenoids. Hastacine is alkaloid similar to platyphylline for its structure and spasmolytic activity.[3-7] Flower and leaves of *Cacalia hastata* L. is widely used for the Mongolian traditional medicine to treat wound healing, gastric ulcer, poisoning fever, liver fever, bile fever, oral cavity and gynecological diseases.[4,8] It is also used to treat respiratory infection, cough and antihemorrhagic for the Tibetan medicine named "King of hurt and break".[4] Nowadays, extract of *Cacalia hastata* L. has been determined to have anti-inflammatory activity: antibacterial, spasmolytic, antipyretic, gastro protector and antihemorrhagic[10]. For the purpose of solving the above problems we aimed to prepare new drug formulation from *Cacalia hastata* L. for the treatment of wound healing.

Corresponding author:
Jambaninj Dambiinyam
School of Pharmacy, Health Sciences University of Mongolia
S.Zorig's street 3, Ulaanbaatar, Mongolia 14210
P.O/Box 48/186
E-mail:ninj_zaya@yahoo.com

MATERIALS AND METHODS

Herb of *Cacalia hastata* L. as a raw material was collected in Tuv aimag in July 2010 and was identified by E.Ganbold, Sc.D.

Quality of raw material of *Cacalia hastata* L. was standardized according to MNS-2897-90[11] by appearance(color, smell, taste), humidity, ash, biological active compound, foreign matter, heavy metals and microbial contamination. The quantity of total alkaloids and total carotenoids is determined by spectrophotometric, and tannin by Lowental method for standardization of gel, liquid and thick extract. Bacterial and mold contamination was defined according to MNS-5189-2002, MNS-5190-2002, MNS-5193-2002, and MNS-5194-2002.[12-15]

For preparing the sem-solid extract from leaves of *Cacalia hastata* L., they were extracted by methods as a remaceration, percolation, repercolation method of Bosni, methods of USP(1960) and German Pharmacopoeia(6th ed, 1926) and used as a solvent by 20%, 40%, 70% ethanol. The quality of sem-solid extract of *Cacalia hastata* L. was determined by appearance(color, smell, taste), humidity, ash, biological active compound, foreign matter, heavy metals and microbial contamination.

The gel formulation was prepared by traditional method. The quality of the gel formulation was investigated comparatively by its appearance (color, smell), pH and viscosity. The pH value of gel bases was measured using pH meter(Hanna 320, Germany)(n=3). Viscosity of gel bases was measured using Brookfield DV-III Ultraprogrammable rheometer(Brookfield Engineering Laboratories. Inc., USA)(n=3).

Tests for significant differences between means were performed by Student's t-test or one-way ANOVA using the software SPSS 16. Differences were considered significant at $p<0.05$ and $p<0.02$ levels.

We prepared sem-solid extract from *C. hastata L*. Was selected optimal solvent and extraction method, and particles of raw materials of medicinal plant for developing extraction process of preparing sem-solid extract. We determined that the optimal solvent for *C.hastata L.* was 70% ethanol, suitable particles of raw material were 2 mm and optimal extraction method was percolation (Table1).

Table 1. Amount of biological active compound dependence on particle size of raw materials, extragent and extraction method

Criteria	Extragent, %			Particle size, mm			Extraction method		
	20% ethanol	**40% ethanol**	**70% ethanol**	**1.0**	**2.0**	**3.0**	**Remace-ration**	**Reper-colation**	**Percolation**
Total alkaloids,%	0.0789 ±0.013	0.0849 ±0.001	0.0898 ±0.003	0.0788 ±0.105	0.0904 ±0.106	0.0789 ± 0.013	0.0788 ± 0.105	0.0849 ±0.001	0.0898 ±0.003
Total carotenoids,mg%	21.04 ±0.008	37.98 ±0.024	60.22 ±0.069	56.95 ± 1.12	60.19 ±0.67	54.09 ±0.008	49.95 ± 1.12	57.98 ±0.024	60.11 ±0.069
Extracted matter	27.664 ±1.401	26.264 ±1.063	25.748 ±1.605	25.99 ± 0.38	26.05 ±0.15	25.66 ±1.40	24.99 ± 0.38	24.26 ±1.063	25.748 ±1.605

P≤0.02

Sem-solid extract from *Cacalia hastata* L. has dark green color, specific smell and bitter taste. The quality of the sem-solid extract from *Cacalia hastata* L. is standardized in accordance with the test of its appearance (color, smell, taste and consistence), moisture, amount of biological active compounds and the rate of heavy- metal (Table 2).

Table 2.The result of the study quality assessment of thick extract from Cacalia hastata L.

Quality criteria	Requirements	Results of the study
Appearance	Specific color, specific taste, specifically smell, syrupy consistency liquid	Dark green colored, bitter taste, specifically smell, syrupy consistency liquid
Total alkaloids, not less %	0.3	0.36±0.11
Total carotenoids, not less mg %	240	246±0.21
Tannins, not less %	12.0	13.6± 0.85
Moisture, not less %	25.0	25.5± 1.12
Heavy metals,%	≤0.01	Not contained
Total bacterial contamination	$\leq 1x10^4$	Not contained

P≤0.02 or the accuracy of the statistics 98%

For the development of appropriate composition prepared gel formulation from sem-solid extract using various excipients such as gel former, solvent, pH adjuster, conserver, moisturizer and antioxidant.

For selecting gel former was to prepare gel by 1% and 2% carbomer, 6% and 10% sodium carboxymethylcelulose. The quality of the gel formulation was studied comparatively by its appearance (color, smell), biological active compound, pH and viscosity. Optimum viscosity was determined when used 1% carbomer by gel former. Due to the result of the study, carbomer 1% was chosen as a gel former (Table 3).

Table 3. Quality of Cacalia gel with different concentration and various gel former

Gel former	Quality criteria for gel formulation				
	Total alkaloids,%	Total carotenoids, mg%	pH Mean±SD	Appearance (Specific smell, dark brown color)	Viscosity, (PaxS)
Carbomer 1%	0.022 ±0.012	12.5 ±0.023	6.02 ±0.045	+	70
Carbomer 2%	0.022 ±0.012	12.5 ±0.013	6.93 ±0.067	+	138
Sodium carboxymethylcellulose 6%	0.022 ±0.011	12.5 ±0.015	7.91 ±0.077	+	12
Sodium carboxymethylcellulose 10%	0.022 ±0.013	12.5 ±0.018	10.74 ±0.059	+	25

+- proper $P<0.02$ or the accuracy of the statistics 98%

Gels are prepared with various concentration triethanolamine and determined quality. Quantity of total alkaloids and total carotenoids, the appearance was not changed when using 1.2 % triethanolamine (Table 4).

Table 4. Quality of Cacalia gel with different concentration triethanolamine

pH adjuster	Quality criteria of gel formulation				
	Total alkaloids,%	Total carotenoids, mg%	pH Mean±SD	Appearance	Viscosity, (PaxS)
Triethanolamine 1.1 %	0.012 ±0.012	12.5 ±0.023	5.79 ±0.067	Specific smell, white brown color	50
Triethanolamine 1.15 %	0.018 ±0.012	12.3 ±0.013	6.33 ±0.045	Specific smell, white brown color	63
Triethanolamine 1.2 %	0.022 ±0.012	12.5 ±0.015	7.02 ±0.077	Specific smell, dark brown color	70
Triethanolamine 1.25 %	0.020 ±0.012	12.3 ±0.018	7.13 ±0.059	Specific smell, dark brown color	76
Triethanolamine 1.3 %	0.0185 ±0.012	12.0 ±0.013	7.29 ±0.077	Specific smell, dark brown color	85

$P<0.05$ or the accuracy of the statistics 95%

For the determination of the quality of gel dependence on the preserver, we prepared gels using methylparaben -0.18%, propylparaben -0.02%, benzalkonium chloride- 0.01%, combined methylparaben-0.18% and propylparaben-0.02% (Table 5).

Table 5. Quality of gel formulation dependence on the conserver

	Preserver			
	Methyl paraben-0.18% Propyl paraben-0.02%	Methylparaben -0.18%	Propylparaben -0.02%	Benzalkonium chloride- 0.01%
Microb. contamin(not more than$1x10^4$)	Not reported	$0.1x10^2$	$1.1x10^2$	$3.1x10^2$

P<0.05 or the accuracy of the statistics 95%

From the table 5, when used with combined methylparaben-0.18% and propylparaben-0.02% as a preserver, the gel was stable for microbial contamination.

Gel contained 1% propylene glycol had good moisturizing effect and did not change viscosity (Table 6). We decided to use 1% propylene glycol as a humectant.

Table 6. Quality of gel formulation dependence on the humectant

	Humectant		
	Propylene glycol-1%	Polyethylene glycol-400- 1%	Glycerol 10%
Moisturizing effect	good	average	bad
Viscosity,10^{-1} mm/sec	70	60	48

Gel formulation from *Cacalia hastata* L. was standardized by such criteria, as the amount of biologically active compound, appearance (color, smell), pH, viscosity and bacterial contamination. From the above results, the studies established the suitable gel base for *Cacalia hastata* L.
The gel which used 1% carbomer by gel former, 1.2 % triethanolamine by pH adjuster, methylparaben-0.18% and propylparaben-0.02% by conserver, 1% propylene glycol by moisturizer completely satisfied the quality criteria.

Stability testing of gel formulation from *Cacalia hastata* L. was studied by long term method. The stability of the gels were checked that were kept in different conditions: straight sunlight place(22-24 degrees Celsius), in room temperature(22-24 degrees Celsius) and in refrigerator at 2-8 degrees Celsius during the term 4 months. The quality of the gel was tested in each terms freshly prepared, after 2 weeks, 30 days, 2 months, 3 months and 4 months . The results are shown on the table 7 and 8.

Table 7.Viscosity of Cacalia gel at various storage condition(n=3)

Term	**Viscosity (PaxS)**		
	straight sunlight place (25°C ± 2°C/60% RH ± 5% RH)	in room temperature (25°C ± 2°C/60% RH ± 5% RH)	in refrigerator (5°C ± 3°C)
Freshly prepared	70	70	70
2 weeks	68	70	70
30 days	67	70	69
2 months	66	70	69
3 months	65	70	67
4 months	50	70	56

Table 8. Amount of biological active compounds of Cacalia gel at various storage condition(n=5)

Term	straight sunlight place (25°C ± 2°C/60% RH ± 5% RH)		in room temperature (25°C ± 2°C/60% RH ± 5% RH)		in refrigerator (5°C ± 3°C)	
	Total alkaloids,%	Total carotenoids, mg%	Total alkaloids,%	Total carotenoids, mg%	Total alkaloids,%	Total carotenoids, mg%
Freshly prepared	0.022 ±0.01	12.5 ±0.015	0.022 ±0.01	12.5 ±0.015	0.022 ±0.01	12.5 ±0.015
2 weeks	0.022 ±0.02	12.5 ±0.013	0.022 ±0.02	12.5 ±0.015	0.02 ±0.01	12.5 ±0.015
30 days	0.022 ±0.03	12.5 ±0.011	0.022 ±0.01	12.5 ±0.014	0.018 ±0.02	11.5 ±0.015
2 months	0.022 ±0.01	12.3 ±0.012	0.021 ±0.04	12.5 ±0.015	0.015 ±0.01	11.1 ±0.015
3 months	0.022 ±0.01	12.1 ±0.011	0.022 ±0.01	12.5 ±0.013	0.011 ±0.03	10.3 ±0.015
4 months	0.021 ±0.01	11.9 ±0.011	0.022 ±0.02	12.5 ±0.012	0.008 ±0.01	9.5 ±0.015

P<0.05 or the accuracy of the statistics 95%

The quality of the gel from *Cacalia hastata* L., which was stored in room temperature, its appearance, viscosity, amount of biological active compounds were stable. The stability test of the gel formulation from *Cacalia hastata* L., is continued.

DISCUSSION

Gel formulation has some advantages such as maximum drug availability, useful for dermatological patches. Aqueous gels are muco-adhesive and to absorb wound exudate or transdermal water and sweat. This muco-adhesive property is used in products designed to prevent post-surgical tissue adhesions.[16]

We prepared herbal gel for the first time in Mongolia. The gel which is used 1% carbomer by gel former, 1.2 % triethanolamine by pH adjuster, methylparaben-0.18% and propylparaben-0.02% by preserver, 1% by moisturizer completely satisfied the quality criteria. Our gel base composition is similar to Indian researcher's gel composition. They prepared herbal gel containing *Clerodendron inforiunatum* leaves extract with 1% carbomer, 0.2% methylparaben, 0.1% propylparaben, 5% propylene glycol and 1.2% triethanolamine.[17]

The stability test of the Cacalia gel for four months has been carried out and results revealed gel which was stored in room temperature showed better stability than straight sunlight place and in refrigerator. In the Indian research's study reported the herbal gel containing *Clerodendron inforiunatum* leaves extract was stable during three months.[18]

Gel bases with carbomer were prepared with various concentration triethanolamine and determined quality. Viscosity of gel was more viscous at pH=7-8, when using 1.2-1.3% triethanolamine. It was similar to the reference in the Handbook of Pharmaceutical Excipients. In the Handbook of Pharmaceutical Excipients reported neutralized aqueous Carbomer gels are more viscous at pH 6-10. The viscosity is considerably reduced at pH values less than 3 or greater than12, or in the presence of strong electrolytes.[16]

CONCLUSION

The optimal solvent for *Cacalia hastata* L. was determined 70% ethanol, suitable particles of raw material were 2 mm and optimal extraction method was percolation.

We prepared thick extract of *Cacalia hastata* L. The quality criteria of the thick extract was determined. Thick extract from *Cacalia hastata* L. has dark green color, specific smell and bitter taste and total alkaloids were 0.36±0.11, total carotenoids were 246±0.21, tannins were 13.6± 0.85.

Appropriate composition of gel formulation for *Cacalia hastata* L. was developed. The gel which used 1% carbomer by gel former, 1.2 % triethanolamine by pH adjuster, methylparaben-0.18% and propylparaben-0.02% by preserver, 1% propylene glycol by moisturizer completely satisfied the quality criteria.

The gel of *Cacalia hastata* L., which was stored in room temprature, was stable. The stability testing of the gel formulation from *Cacalia hastata* L., is continued.

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Self management and diabetes education of newly diagnosed patients with Type 2 diabetes in Mongolia

Enkhjargal Ya* Tserendagva D[1], Kh.Altaisaikhan[2] Davaalkham D[3]
[1]School of Health Technology , Health Sciences University of Mongolia,
[3]Health Sciences University of Mongolia,
[4] School of Public Health, Health Sciences University of Mongolia

ABSTRACT

Educating patients about diabetes plays a pivotal role in encouraging people to changing lifestyle and supporting them to improve the quality of life, and actively responsibile for self control of their condition.

To evaluate self management after receiving diabetes education for newly diagnosed Type 2 diabetes in Mongolia

The cross-sectional survey was conducted from May and October 2011. At Diabetes centers and Level II hospitals in Ulaanbaatar**.** 150 participants with type 2 diabetes was referred within, from May to August as newly diagnos and included only the ones who met inclusion criteria and agreed with informed consent. Each patient's knowledge and psychosocial status were assessed be the internationally accepted questionnaire and collected anthropometric and metabolic indicators according to the protocol. Statistical analysis was performed with the SPSS16 software.

The study involved newly diagnosed Type 2 diabetes 23-64 years were men 43,6% (65),women 56,7% (85). Educated groups participants attended a structured education programme within 0-2 weeks of diagnosis.The diabetes knowledge anthropometric and metabolic indicators were indifferent between groups educated and without diabetes education. However psychosocial status which includes satisfaction of health care service, anxiety of their disease depression related blood glucose reactions eating family and regular self management was significantly different between educated and without education groups.

Psychosocial status which includes satisfaction of health care service, anxiety of their disease, depression related blood glucose reactions eating family and regular self management were significantly different between both groups.

Key words: Newly diagnosed type 2 diabetes, patient's self management education

INTRODUCTION

The prevalence of type 2 diabetes mellitus (T2DM) increases rapidly worldwide.[1] The morbidity and mortality caused by diabetes ranked after cardiovascular diseases (CVDs) and cancer burden the public problems in Public Health. Recently, there are 248 million people with diabetes in the world and people from age 20-60 might have high risk of getting T2DM. Almost 90% 0f all diabetes incidences are accounted for T2DM. Patients with type 2 diabetes are at 2-4 fold high risk of CVDs [2,3]

In recent years, a good number of patients are suffering from Diabetes Mellitus (DM), which has been increasing rapidly in Mongolia relating to the changes in socio-economic lifestyle and habits.The diabetes prevalence was estimated in men 2.4%, and in women 3.1% and Impaired Glucose Tolerance (IGT) 9.1% in 1999.[4] later in 2009, second nationwide STEP Survey on Non communicable diseases risk factors estimated the prevalence of DM 6.5% and Impaired Fasting Blood Glucose (IFG) 9.5%.[5] The World Health Organization (WHO) and the International Diabetes Federation (IDF) promotes the strategy of providing diabetes care service by interdisciplinary professional team specialized in diabetes treatment and management.[6] Diabetes self management education is framework of interdisciplinary professional diabetes care. Educating patients about diabetes have a pivotal role in encouraging, changing lifestyle and supporting them to assume active responsibile for the self control of their condition and to improve the quality of life (QOL)[7,8]

There are increasing evidences for diabetes self-management which includes, not limited to, weight control, exercise, better food choice, awareness of their disease, prevention of late complications such as eye, kidney, neurology, and CVDs. Patients' competence on self-management is important for diabetes control, decrease the risk of metabolic and late complication, and improve the quality of life[9,10,11]

***Corresponding author**:
Enkhjargal Yanjmaa
School of Health Technology , Health Sciences University of Mongolia
email:enkh34@yahoo.com

The main goals of diabetes patient education have been expressed as promoting self management that in turn may lead to long-term diabetes control to reduce associated morbidity and mortality and to help people with diabetes balance short and behavior change against the burden of daily intensive self-monitoring[12]

Newly diagnosed patients with T2DM at districts and clinical hospitals are involving in the diabetes education by diabetes educators and endocrinologists. The education is conducted according to the Mongolian Clinical Guideline of diabetes to the 8 modules structured education programme at first day of diagnosis. To evaluate self management after receiving diabetes education for newly diagnosed Type 2 diabetes in Mongolia

Assumption

1. The diabetes education for the patients with type 2 diabetes at their clinics is inadequate.

2. Among the newly diagnosed individuals with type 2 diabetes the knowledge of their disease, physical exercise , psychosocial status, metabolic indicators are different between two groups educated and without diabetes education

MATERIALS AND METHODS

The cross-sectional survey was conducted between May and October 2011. At diabetes center and Level II hospitals are (Bayngol, Baynzurkh, Songinokhairkhan, Sukhbaatar and Khan-Uul) hospitals in Ulaanbaatar who have been controlled by endocrinologists. 150
participants with type 2 diabetes were referred were referred within from May to August as newly diagnosed.

Inclusion criteria were: Patient with newly diagnosed type 2 diabetes from May to August 2011, 20- 64 years old, no history in mental health problems, not in insulin treatment, no history in diabetes complication, have not participated in any studies about diabetes, with permanent address and available for follow–ups, have take overall information of study, have agreed to participate in the study

Exclusion criteria were: pregnant, breastfeeding, below 20 and over 64 age group, with disability, with diabetes chronic complication, more than 5 months since the diagnosis of diabetes, sensitive group(students, convicts, soldiers) with organ systems complication (liver, renal failure, digestive system)

Data collection: General diabetes knowledge was assessed on 24 a multiple-choice international questionnaire. The psychosocial assessment was done 16 questionnaire on Problem Areas In Diabetes (PAID) Questionnaire by Likert scale. Anthropometrics measurement and clinical examination were height (sm), weight (kg), Systolic blood pressure (mm Hg), Diastolic blood pressure (mm Hg) Waist circumference (sm) Percent body fat (%) We measured hemoglobin A_{1C} (%), High density lipid (mmol/l), Low density lipid (mmol/l), triglyceride (mmol/l), Fasting blood glucose (mmol/l)

Anthropometric measurement and tools used

The clinical examination included the measurement of weight (in light indoor clothes to the nearest 100gr), height (without shoes to the nearest 1mm). We used body mass measurement are percent body fat (PBF) and Body mass index (BMI) by Vivente of Korea. The waist circumference measured (midway between the lowers rib and iliac crest to the nearest 1mm) by tape measure and if patients have pendulous belly measured in the cord. Before the clinical examination participants had any tea, meal or coffee should wait for 15 minute until they gets average of blood pressure 2-3 times with OMRON model M5.

Laboratory measurement:

We measured hemoglobin $A_{1C,}$ (HbA_{1C}) High density lipid (HDL), Low density lipid (LDL) , triglyceride (TG) by a fully automatic analyzer Clindiag FA-300 of Belgium. Fasting blood glucose was measured by glucometer Accu-chek activ. The study was conducted principal investigator obtained the Medical ethics committee of the Ministry of Health, Mongolia. Each participant gave written informed consent and study protocol was approved.

Statistical analysis

Statistical analysis were performed with the SPSS16 software. Based on the mean value between educated and non-educated groups were tested using Pearson Chi square test and T test, Mann-Whithney test (Nonparametric method). P value of less than 0.05 was considered to be statistically significant.

RESULTS

The study involved newly diagnosed Type 2 diabetes 23-64 years men 43,6% (65),women 56,7% (85) and 31,7% of the participants had a family history of diabetes. (table 1) Educated group's participants attended a structured education programme within 0-2 weeks of diagnosis.

Table 1. Characteristics of study participant's

Diabetes education								
Indicator		Total		Educated		Non- educated		p-value
n,		%	n,	%,	N	%,		
sex								0,41
	Male	38	46,9%	38	46,9%	27	39,7%	
	Female	43	53,1%	43	53,1%	42	60,3%	
total		81	100%	81	100%	69	100,0%	
age		48,71	9,60	48,71	9,60	49,73	9,09	0,513
Family history of diabetes								0,100
	Yes	20	25,6%	20	25,6%	24	39,3%	
	No	58	74,4%	58	74,4%	48	60,7%	
total		78	100,0%	78	100,0%	61	100,0%	
Education								
	High	41	53,2%	41	53,2%	23	35,4%	
	Specialized	11	14,3%	11	14,3%	14	21,5%	
	Middle	24	31,2%	24	31,2%	20	30,8%	
	Elementary	1	1,3%	1	1,3%	8	12,3%	
total		61	100,0%	61	100,0%	47	100,0%	

The anthropometric and metabolic indicators of participants were indifferent between groups educated and non-educated (table 3). Body Mass Index (BMI) was 31,3± 8,28 in group that had education. The 30,5±6,44 in group that had non diabetes education, HbA_{1C} was 10,2±1,1 and 10,5±5,6 in group was and non-educated respectively. These results were not significant between the two groups. (p=0,245 and (p=0,052) (Table 3)

Table 3. **Metabolic characteristics of participants with newly diagnosed type 2 diabetes educated and non-educated groups**

Education							
Indicators	Educated group		Non educated group		total		p-value
mean	SD†	mean	SD†	mean	SD†		
Body weight (kg)	83,29	18,92	80,33	16,40	81,78	17,13	0,329
BMI (kg/м^2)	31,23	8,28	29,89	5,23	30,50	6,44	0,245
WC (sm)	103,29	12,66	99,45	16,61	101,35	14,94	0,146
Systolic blood presure (mm Hg)	129,12	20,03	130,89	18,39	130,03	19,25	0,589
diastolic(mm Hg)	83,86	13,98	88,45	13,40	86,33	13,92	0,052
HbA1C (%)	10,23	1,13	10,79	7,38	10,52	5,60	0,574
HDL -C (mmol/l)	1,35	0,34	1,44	0,52	1,40	0,45	0,292
LDL-C(mmol/l)	3,91	1,64	3,78	1,75	3,85	1,73	0,663
TG(mmol/l)	1,66	0,56	1,91	1,21	1,84	1,00	0,162
PBF (%)	32,89	7,15	32,88	6,50	32,89	6,67	0,992

Psychosocial status was assessed by the Likert scale. The result showed satisfaction of health care service, anxiety of their disease , depression related blood glucose reactions eating family and regular self management was significantly different between two groups(.p=0.038 and 0,017) (table 4)

Table 4. Problem Areas in Diabetes

Diabetes education	educated		Non-educated		total		p-value
	mean	SD ‡	mean	SD ‡	mean	CX ‡	
Not having clear concrete goals for diabetes care?	1,90	1,15	2,26	1,10	2,11	1,13	**0.038†***
Feeling discouraged with diabetes treatment plan?	1,89	0,98	2,12	1,04	2,02	1,01	0.196†
Feeling scared when you think about living with diabetes?	2,06	1,07	2,53	1,14	2,35	1,13	**0.017†***
Uncomfortable social situation related diabetes?	2,90	1,33	3,16	1,32	3,06	1,32	0.349†
Feeling of deprivation regarding food?	2,07	1,23	1,90	1,13	1,97	1,17	0.404†
Feeling depressed when you think about with diabetes?	2,62	1,38	2,77	1,38	2,71	1,38	0.499†
Mood or feelings are related to your diabetes?	2,38	1,18	2,40	1,25	2,39	1,22	0.994†
Feeling overwhelmed by your diabetes?	2,09	1,25	2,48	1,28	2,32	1,28	0.074†
Worrying about blood sugar reactions?	2,59	1,24	3,01	1,21	2,85	1,24	**0.050†***
Feeling angry when you think about living with diabetes?	2,80	1,39	2,95	1,33	2,89	1,35	0.492†
Feeling constantly concerned food with family?	2,13	1,32	2,59	1,40	2,40	1,38	**0.041†***
Worrying about the future the complication?	2,85	1,38	3,23	1,43	3,08	1,42	0.130†
Feeling unsatisfied with your diabetes physician?	1,72	1,32	1,91	1,21	1,83	1,25	0.142†
Feeling alone with your diabetes?	1,82	1,15	1,93	1,32	1,88	1,25	0.824†
Feeling that your friends are not supportive of diabetes?	1,65	1,14	1,73	1,26	1,70	1,21	0.927†
Feeling burned out by the constant effort needed to manage?	2,05	1,28	2,70	1,37	2,44	1,37	**0.005†***
†- Mann-Whithney test (Nonparametric method)							

DISCUSSION

67,9% (55) of the patient with type 2 diabetes were educated in the outpatient's clinics education programme, 28,3% (23) attended inpatient based education programme and 3,7% (3) attended in family clinics. The groups did not differ significantly for patients diabetes knowledge.(p= 0.40) which suggested the duration after diagnosis might influence.[13] The anthropometric and metabolic might not change in only 1-3 months, the indicators are continuously monitored among study participants .The physical activity was not distinct between groups educated and non-educated. Move over the level of physical activity was lower in both groups. Most of the participants ride vehicles and public transportation and only 1% of them ride bicycles. 56,4% of the study subjects monitor their blood glucose at home and 44,6% go to hospital which suggests the low level of awareness of diabetes management and supply of glucometer. It is maybe related to diabetes patient education which lack proper training. Our this survey is continuing follow-ups.

CONCLUSION

Psychosocial status which includes satisfaction of health care service, anxiety of their disease, depression related blood glucose reactions eating family and regular self management was significantly different between both groups.

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Results of study on family practice's human resources

B.Tsengelmaa[1]*, B.Irgil[2], O.Chimedsuren[3]
[1] School Gurvanjargalkhairkhan FGP
[2] Ach Medical
HSUM, SPH School
[3] School of Public Health

ABSTRACT

The aim of specialty training in family medicine is to prepare family doctors to provide comprehensive, high quality care for individuals, families and communities. This requires training that is specifically designed to convey the knowledge, attitudes and skills that are necessary for their future practices. There is a need to study appropriateness of FGPs' organization and capacity of human resources and their specialization profile in order to define accessibility, equity, and quality of services providing by FGP. There are 124 FGP in Ulaanbaatar (UB) and this study aims to identify provision of human resources and their specialized profile. There were 77(62%) FGP's of six districts of UB covered by the study. Family group practices are small private limited companies and their services contracted by the Government of Mongolia to provide PHC to population. Some 82%, 7% and 11% of FGPs run their services in premises that suitable, unsuitable for FGP service and rented ones, respectively. A family practitioner and a nurse provided services for population almost twice greater compared to required standards, and it was observed in all districts of Ulaanbaatar. There were only 1.6% and 1.1% of doctors and nurses attended family practice training, respectively.

There is a need to increase number of professionals in FGPs of UB and provide specialization training to strengthen FGP's human resources.

Key words: family group practice, family doctor, family nurse, primary health care, human resources.

INTRODUCTION

The Government of Mongolia is undertaking some reforms to strengthen human resources and their training in health sector, and this reflects in the documents such as "Policy on development of human resources in health sector for 2004-2013 years" and "Health Sector Strategic Master Plan for 2006-2015 years".

The Mongolian Government' aim was to render primary health care services in cities, towns and aimag centers through Family Group Practices (FGP) in 1992 and in 1994-1995 family doctors and nurses started to practice. First FGPs started to function in 1999 and there are currently 225 family practices in Mongolia.

Providing primary health care (PHC) through FGPs, further their privatization and contracting them for public services became one of the achievements in health care policy in the transition period to market economy. This raises challenges for improving access to PHC, their quality and strengthening human resources.

There is a need to study appropriateness of FGPs' organization and capacity of human resources and their specialization profile in order to define accessibility, equity, and quality of services providing by FGP. There are 124 FGP in Ulaanbaatar (UB) and this study aims to identify provision of human resources and their specialized profile.

GOAL OF THE STUDY

To study provision of human resources of FGPs and their specialized profile and suggest some recommendations directed for further strengthening.

OBJECTIVES OF THE STUDY

1. To compare current human resources provision of FGP to standards
2. To study specialization profile of FGP' staff
3. To develop and suggest some recommendations for strengthening human resources.

METHODS

There were 77 (62%) FGP's of six districts of UB covered by the study. Data on human resources of FGPs and their specialization profile was obtained through direct observation.

Developed checklists and questionnaire were used to collect data on specialization profile of human resources and their training needs. Collected data was entered to, checked and analysed using SPSS-17.0 software. Statistical tests for determining mean of the sample, its minimum and maximum values, standard deviation and error. Correlation of variables was assessed using F and T tests.

***Corresponding author:**
B.Tsengelmaa.
Gurvanjargal Khairkhan FGP
E-mail: tsengee_68@yahoo.com

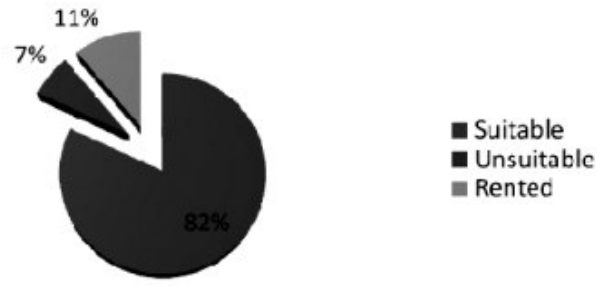
RESULTS OF THE STUDY

Family group practices are small private limited companies and their services contracted by the Government of Mongolia to provide PHC to population. Some 82%, 7% and 11% of FGPs run their services in premises that suitable, unsuitable for FGP service and rented ones, respectively. There were 2273 and 2233 people for one family doctor and nurse respectively. Table 1 shows population, place of their living and staffing of FGPs.

Table1. Number and localization of FGPs

District of UB	Total number of District Population	Number of FGPs	Number of population living in:		Number of staff of FGPs		
			Ger	Flat	Family doctors	Family nurse	Others
Bayangol (BGD)	110784	21	39821	70963	49	53	35
Bayanzurkh (BZD)	132852	23	155067	27606	57	61	48
Songinokhairkhan (SKHD)	119514	25	82352	37162	57	55	47
Sukhbaatar (SBD)	91211	18	52024	39197	43	44	23
Chingeltei (CHD)	98657	19	82649	16008	38	41	34
Khan-Uul (KHUD)	85760	12	59506	26254	37	35	48
Total	638778	118	471419	217190	281	289	235

There were 58 (82%) out of 77 selected FGPs which run their services in premises that were built as PHC' office and matched required standards.



A family practitioner and a nurse provided services for population almost twice greater compared to required standards, and it was observed in all districts of Ulaanbaatar. Families living in block buildings were predominant in Bayangol, Sukhbaatar districts whereas people living in ger areas were majority in Songinokhairhan, Bayanzurkh and Chingeltei districts.

Figure1. Premises for FGPs

Table2. Specialization of Family practitioners

Specialization	SKHD n=30	CHD n=30	KHUD n=30	SBD n=30	BGD n=30	BZD n=30	Total
General doctor	17	15	26	28	24	19	129
Paediatrician	3	6	1	2	0	4	16
Physician	1	2	0	0	2	2	7
Traditional medicine doctor	2	3	1	0	1	1	8
Dentist	0	1	0	0	0	0	1
Family doctor	7	3	2	0	3	4	19
Total	30	30	30	30	30	30	180

Most of family practitioners (71.6%) graduated as basic doctors and only 10.5% of them specialized as family physicians .

Table3. Trainings attended for the last five years

№	Training attended	SKHD	CHD	KHUD	SBD	BGD	BZD	Total
1	Neuropathology	1			1			2
2	Internal medicine					2	1	3
3	Management	1			1			2
4	Training in the Academy of Management				1		1	2
5	Imaging diagnostics	3	1	1	1	1	2	9
6	Defence of Master's degree						1	1
7	Family doctor	1	1				1	3
8	Defence of PhD degree	1						1
9	Dermatologist		1					1
10	Acupuncture practice				1			1
11	Paediatrics		2					2
Total								28

Some 15.5% of all selected family practitioners attended upgrading training in different fields and only 1.6% attended specialization training on family medicine.

Table4. Specialization of family nurses

Specialization	SKHD n=30	CHD n=30	KHUD n=30	SBD n=30	BGD n=30	BZD n=30	Total
General nurse	17	18	29	26	29	22	143
Feldsher	3	2				2	7
Methodologist on nursing	1	2				1	4
Midwife	7	6	1	4	1	5	24
Traditional medicine nurse	1	1					2
Family practice nurse	1	1					2
Total	30	30	30	30	30	30	180

Out of 180 nurses covered by the study 79.4% (143), 13.3% (24), 2.2% (4) and only 1.1% (2) were trained as general nurse, midwife, nursing assistant and family practice nurse, respectively.

Table5. Family practice nurses specialization training attended for the last five years

Training attended	SKHD	CHD	KHUD	SBD	BGD	BZD	Total
Family practice nursing	1	1					2
Bachelor in nursing	1	2				1	4
Traditional medicine	1	1			1	1	4
Immunization	1	1					2
Sterilization and disinfection	1	1				1	3
IT	1	1			1	2	5
Total							20

There were 11.1% (20) of nurses from selected FGPs who attended some specialization trainings.

Figure 2 shows specialization training preferences for 180 family doctors participated in the study.

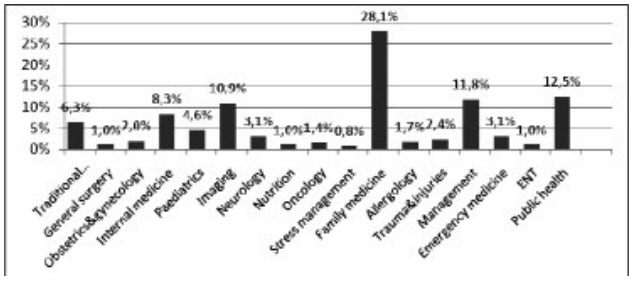


Figure2. Family doctors' preferences for further training

Some 28.1% of family practitioners stressed that they would like to attend upgrading training courses in family medicine, 12.5% of them training on public health, 11.8% on healthcare management, 10.9% on imaging diagnostics, 8.3% on internal medicine, 6.3% on traditional medicine and 4.6% on child health care.

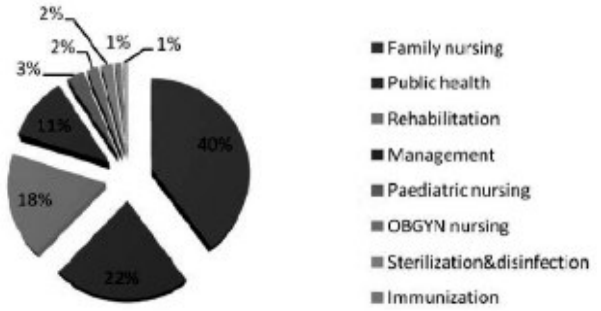


Figure3. Family practice nurses' preferences for further training

FGP nurses' preferences of training were as follows: 40%, 22%, 18%, and 11% on general practice nursing, public health, physiotherapy and management, respectively.

DISCUSSION

There was slight decrease in number of family doctors and nurses and increase in number of auxiliary personnel in UB and aimags in 2010 compared to the time when FGPs started functioning. Almost half of family practitioners (57%)

did not attend professional training in Dornogobi, Khovd, Khuvsgul aimags and UB in 1998. According to the Minister of Health and Social Welfare order №46 in 2000 trainings on family medicine were organized and more than 800 family practitioners attended trainings on family medicine, management of FGPs

In 1992 during piloting of the project of shifting to FGPs most of doctors (87%) were paediatricians and physicians. But our study showed that general physicians, specialized family doctors and paediatricians were 71.6% (129), 10.5% (19) and 8.8% (16) respectively. There were 79.4% (143) general nurses, 13.3% (24) midwives and 2.2% (4) methodologist on nursing.

The study on "Determining the needs of medical and health professionals" from the Department of public administration and management of the Ministry of Health of Mongolia has been implementing since 2009 and will carry out until 2020. It was estimated that renewed standards for FGPs would be as follows: soum and family doctors who were educated in general medicine for six years will be get further one and four year training in family medicine; in average 1500 people for a soum or family doctor; two nurses for a FGP doctor. In other words in order to provide family doctors and nurses according to renewed standards there will be a need for prompt training family practitioners and nurses. This is does not match the standards where there are 1200-1300 people for a family doctor, maximum and minimum number of people are 1600 and 900 people for a doctor and doctor/nurse ration is 1:2. The Ministry of Health and S. Aruintuya's study presented the same conclusions as ours.

FGP' practitioners and nurses provide service to population twice greater than in required standards, and there were only 1.6% and 1.1% of doctors and nurses attended family practice training, respectively. Therefore, there is a need to increase number of professionals in FGPs and provide specialization training to strengthen FGPs human resources.

CONCLUSIONS

1. FGP' practitioners provide service to population twice greater compared to required standards (MNS 5292:2003) and doctor/nurse ratio is 1:2 does not exist. This shows that FGP's staffing need to be increased in the future.
2. Some 82% of FGPs provide their service in premises suitable for FGP and located comfortably for population.
3. There were only 1.6% and 1.1% of doctors and nurses attended family practice training, respectively.
4. There is a need to increase number of professionals in FGPs of UB and provide specialization training to strengthen FGP's human resources.

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Awareness and attitude about hypertension, breast and cervical cancers among rural population: A Baseline survey prior to intervention

Davaalkham D[1*],Lkhagvasuren Ts[2]
[1]Department of Epidemiology and Biostatistics, School of Public Health, Health Sciences University of Mongolia
[2]Health Sciences University of Mongolia

ABSTRACT

In Mongolia, Non-communicable diseases have been increasing very rapidly during the last decades. Knowledge and practice of population is regarding the risk factors of these diseases are crucial in order to prevent from and decrease non-communicable diseases. This study was conducted to assess the some knowledge of hypertension, breast and cervical cancer among rural population in Mongolia. We conducted a population-based cross-sectional study in Bulgan and Arkhangai provinces. Data were collected as baseline data of a study entitled "Distance education for emerging health issues in Nomadic Mongolia". A questionnaire was used to collect data regarding the knowledge, awareness and attitude of rural population regarding the main non-communicable diseases. A total of 237 people were enrolled in the study out of whom 135 were from Bulgan province and 102 were from Arkhangai provinces. Around 47% and 34.9% were males, and the majority (69.7% and 66.3%) was aged less than 49 years of age. More than 72% of people living in Bulgan aimag have been checked for blood pressure within the last 12 months compared to 64% of those living in Arkhangai province ($p<0.05$). An attitude toward supporting healthy lifestyle in order to decrease the blood pressure was different among study population. Only 18.1% and 36.9% of female study participants were aware of mammography test for breast cancer whereas proportion of those who have undergone mammography test was very insufficient as 4.4% and 5.3% in Arkhgangai and Bulgan provinces. Awareness and attitude regarding the self checking for breast cancer was better than that of mammography test. Awareness of PAP SMEAR test for cervical cancer was better compared to mammography test in both provinces. More than 38% and 42.4% of women living in Bulgan and Arkhangai provinces were aware of this test, respectively ($p<0.05$). However, number of those who undergone this test was insufficient as 11.5% in Arkhangai province.In conclusion, the present study shows that awareness and attitude of rural population regarding the hypertension, breast and cervical cancer are insufficient and health education for general populatiion particularly for rural citizens are urgently needed in order to decrease the main non-communicable diseases in the country.

Key words: Awareness, attitude, hypertension, breast cancer, cervical cancer

INTRODUCTION

During the last few decades, Mongolia has experienced a gradual epidemiological transition from a preponderance of infectious diseases towards noncommunicable and degenerative diseases. Main features of this transition are sharp decrease in mortality of infectious and parasitic diseases and sharp increase in mortality from diseases of the circulatory system and neoplasms. Main 5 causes of death among population in Mongolia are diseases of the circulatory system, cancer, injury and poisoning, diseases of the digestive system and respiratory system.

Increase of cancer death became crucial problem of public health in Mongolia. Since 1994 it has been taking the second place by mortality, and caused 22 percent of all deaths among the population.[1]

Prevalence of obesity and metabolic syndrome (MetS) is rapidly increasing in developing countries, leading to increased morbidity and mortality of type 2 diabetes mellitus and cardiovascular diseases (CVD).[2-4] In 2001, CVD has the leading cause of death worldwide.[5] Twice as many deaths due to CVD now occur in developing countries as in developed countries.[6] In Mongolia, CVDs are still one of the main health problems, and it is 4th place in main causes of morbidity and 1st place in mortality in 2009. Ischemic heart diseases as hypertensive disorder are the main cause of CVD in Mongolia. [1,7]

The MetS is characterized by clustering cardiovascular risk factors, including central obesity, hypertension, dyslipidemia, and increased glucose concentration.[8-13] Persons with MetS are at essentially twice the risk for cardiovascular disease compared with those without the syndrome.[13]

***Corresponding author:**
Dambadarjaa Davaalkham, MD, PhD,
Department of Epidemiology and Biostatistics,
School of Public Health,
Health Sciences University of Mongolia.
E-mail: davaalham@yahoo.com

In order to determine the prevalence of common modifiable risk factors for NCDs, the steps surveys and diabetes surveys were done in Mongolia.[14-17] However, the nationwide population-based cohort study has not been conducted yet in Mongolia while descriptive and cross-sectional study designs were commonly used, and data are very limited on population's awareness and attitude regarding NCDs and their risk particularly for those living in rural areas. Therefore, we carried out a cross-sectional study in order to assess the awareness, attitude and practice of major NCDs and their risk factors. The results of our study would be helpful in developing national policies and programs against these NCDs.

MATERIALS AND METHODS

Study design and population

In this study, a cross-sectional study was conducted. Data were collected as baseline data of a a study entitled "Distance education for emerging health issues in Nomadic Mongolia". The survey was designed to cover rural areas of Mongolia, including Arkhangai and Bulgan provinces. In general, objective of the main survey was to increase the awareness and knowledge of the rural communities on main causes of population deaths including Cancer and Cardiovascular diseases using animation in TV programs. The use of television as a vehicle to deliver education is well tested and documented. The proposed investigation is about using the same vehicle to assess the pedagogical gains using pictures or animations through broadcast television on health related subjects, specifically on Cancer and Cardiovascular diseases. Specially produced programmes using animation technologies on cardiovascular diseases and cancer have been broadcasted periodically to rural populations in two province center of Bulgan province.

The animation through the TV broadcast program will be followed immediately by SMS-based test questions to 100 randomly selected viewers (in one province) as the experimental group. The responses of this experimental group will be compared to responses from a 'control' group of 100 randomly selected people, which will be selected from province center of Arkhangai province.

Data collection

Data for both objective 1 and 2 will be collected through surveys and interviews. A questionnaire was used to collect data regarding the knowledge, awareness and attitude of rural population regarding the main non-communicable diseases. Each participant was interviewed and completed standardized questionnaire that included a range of demographic factors, aspects of medical history, knowledge of CVD and cancers as well as their life style.

Statistical analyses

Statistical analyses were performed using SPSS version 17. The prevalence and 95% confidence intervals (CIs) were observed for variables as appropriate.

Ethical issues

The study procedures were explained to participants and written informed consent was obtained. The study protocol was reviewed by the Ethical Review Committees of the Health Sciences University of Mongolia, Mongolia.

RESULTS

A total of 237 people were enrolled in the study out of whom 135 were from Bulgan province and 102 were from Arkhangai provinces. Around 47% and 34.9% were males, and the majority (69.7% and 66.3%) was aged less than 49 years of age. People residing in apartments (29.7) and ger (16.8%) dwelling were more common in Arkhgangai province compared to study participants in Bulgan province (14.8% and 11.1%).

More than 72% of people living in Bulgan aimag have been checked for blood pressure within the last 12 months compared to 64% of those living in Arkhangai province ($p<0.05$). Pople living in Arkhgangai province were more likely to be not checked for blood pressure within last 5 years in comparison to citizens of Bulgan province. Proportion of people using antihypertensive drug was 25.4% and 20.5% in the above mentioned provinces, respectively.

Attitudes toward supporting healthy lifestyle in order to decrease the blood pressure was different among study population. For instance, 14.9% and 20.0% of people with hypertension were trying to decrease their weight in order to control blood pressure. Moreover, around 20% of people were trying to do exercise regularly to control hypertension.

Only 18.1% and 36.9% of female study participants were aware of mammography test for breast cancer whereas proportion of those who have undergone mammography test was very insufficient as 4.4% and 5.3% in Arkhgangai and Bulgan provinces. Awareness and attitude regarding the self checking for breast cancer was better than that of mammography test. Awareness of self testing for breast cancer was 40-48%, and proportion of those who conducts self checking of their breasts were 34.7% to 45.9% in these areas.

Table 1. Some demographic characteristics of study population

Variables		Bulgan aimag		Arkhangai aimag	
		n	%	n	%
Sex					
	Male	66	47.8	37	34.9
	Female	72	52.2	69	65.1
Age					
	Less than 29	38	27.5	39	38.2
	30-39	37	26.8	34	33.3
	40-49	35	25.4	15	14.7
	50-59	19	13.8	10	9.8
	more than 60	9	6.5	4	3.9
House type					
	Ger	15	11.1	17	16.8
	Winter house	96	71.1	41	40.6
	Apartment	20	14.8	30	29.7
	Others	4	3.0	13	12.8
	Total	135	100.0	102	100.0

Table 2. Control of Hypertension among study population

	Bulgan aimag		Arkhangai aimag	
	n	%	n	%
Checking blood level by health care professionals				
Within last 12 months	86	72.9	55	64.0
Within 1-5 years	15	12.7	12	14.0
Not during the last 5 years	17	14.4	19	22.1
Use of antihypertensive medicine				
Yes	30	25.4	16	20.5
No	88	74.6	62	79.5
To be on diet for controlling blood pressure				
Yes	16	15.1	8	11.3
No	90	84.9	63	88.7
Total	106	100.0	71	100.0

Table 3. Some attitudes of study population toward controlling blood pressure

Variables	Bulgan aimag		Arkhangai aimag	
	n	%	n	%
Attitude to decrease body weight for controlling hypertension				
Yes	15	14.9	14	20.0
No	86	85.1	56	80.0
Attitude to stop smoking for controlling hypertension				
Yes	14	20.6	6	12.2
No	54	79.4	43	87.8
Attitude to do exercise for controlling hypertension				
Yes	19	21.1	13	20.6
No	71	78.9	50	79.4
Total	90	100.0	63	100.0

Table 4. Awareness and attitude regarding the breast cancer tests

Variables	Bulgan aimag		Arkhangai aimag	
	n	%	n	%
Awareness of mammography testing				
Know	15	18.1	24	36.9
Don't know it	52	62.7	41	63.1
Undergone mammography test				
Yes	4	5.3	3	4.4
No	72	94.7	65	95.6
Awareness of self testing for breast cancer				
Know	28	39.4	31	48.4
Don't know	43	60.6	33	51.6
Self testing for breast cancer				
Yes	25	34.7	28	45.9
No	39	54.2	12	19.7
Don't know	8	11.1	21	34.4

Awareness of PAP SMEAR test for cervical cancer was better compared to mammography test in both provinces. More than 38% and 42.4% of women living in Bulgan and Arkhangai provinces were aware of this test, respectively ($p<0.05$). However, number of those who undergone this test was insufficient as 11.5% in Arkhangai province.

Table 5. Awareness and attitude regarding cervical cancer test

Variables	Bulgan aimag		Arkhangai aimag	
	n	%	n	%
Awareness of PAP SMEAR test				
Know	27	38.6	25	42.4
Don't know	43	61.4	34	57.6
Tested for PAP SMEAR				
Yes	20	27.8	7	11.5
No	44	61.1	48	78.7
Don't know	8	11.1	6	9.8

DISCUSSION

Non-communicable diseases (NCDs), including CVDs, cancers, diabetes, chronic respiratory diseases, affect many people's lives, health, and socio-economic development and have become an urgent problem of public health.[18-20] In 2008, 60% of all deaths in the world total 38 million people, died of the NCDs. Eighty percent of these deaths occurred in low- and middle-income country. The highest absolute number of deaths will occur in the Western Pacific and South-East Asia regions.[21-23] For more than a decade, CVDs are the first leading cause of death and fourth leading cause of morbidity in Mongolia, and CVD morbidity is increasing year by year.[24] Cancer is the second leading cause of mortality in Mongolia. Consequently, the high prevalence of NCD caused deaths has had an impact on life expectancy of Mongolians. Life expectancy is lower than developed countries, which ranked 153 in the world from 223 countries in 2009 year.[24-25] The Mongolian Non-communicable Diseases STEPs survey of 2006 revealed that 9 in every 10 people (90.6% of the surveyed population) had at least one risk factor for developing NCDs. One in every five people (20.7% of the surveyed population) had three and more risk factors and in particular, and one in every two males aged 45 years and above was at high risk of developing NCDs.[14-15]

The goal of the study, named "Distance education for emerging health issues in Nomadic Mongolia" was to increase the awareness and knowledge of the rural communities on main causes of population deaths including Cancer and Cardiovascular diseases using animation in TV programs. The use of television as a vehicle to deliver education is well tested and documented. The proposed investigation is about using the same vehicle to assess the pedagogical gains using pictures or animations through broadcast television on health related subjects, specifically on Cancer and Cardiovascular diseases.

It was aimed to determine which method is the most efficient in order to provide education and what's the people perfection regarding the learning methodology. In this paper we describe some results of baseline survey or survey prior to intervention of "Distance education for emerging health issues in Nomadic Mongolia" study.

According to the MonCohort study conducted in 2009, The prevalence of MetS among Mongolian people 40-90 years of age in this study was 37.1% as defined by the IDF and 26.3% as defined by NCEP guidelines, and the use of the IDF definition significantly increased the prevalence of MetS. This differences were same in other study, where the prevalence of MetS was 36.2%, 46.3%, 37.4% and 45.5% as defined by the IDF definition and 24.8%, 30.5%, 34.7% and 24.3% as defined by ATP III guidelines in adults of Kuwaitis, Chinese, Iran, and Tunisia.[26]

In study results conducted in Mongolia in 2005 (n=3411), the prevalence of overweight and obesity were 21.8% and 9.8% of the population 15-64 years of age.[14] This is increasing in 2009 (n=5438) 27.3% and 12.5% in same age group.[15] The high prevalence of overweight, obesity and MetS could be result of the unhealthy lifestyle of Mongolian as a physical inactivity caused by urbanization (of the total population, 62.6% are living in cities and the remaining 37.4% reside in rural areas in 2009)[6] and dietary habits as a less using fruit, vegetables (92.3 percent of the Mongolian population consumed less than 5 servings of fruit and vegetables daily)[15], using animal fat and meat more frequently.[14]

In conclusion, the present study shows that awareness and attitude of rural population regarding the hypertension, breast and cervical cancer are insufficient and health education for general populatiion particularly for rural citizens are urgently needed in order to decrease the main non-communicable diseases in the country.

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Study on home health care nursing need's in some provinces

Solongo D[1]*, Naranchimeg S[2], Orgil B[3] Ganchimeg U[2], Burmaa B[2], Munkhtuya Ts[2], Batsereedene B[4]

[1]Ulaanbaatar University, School of Nursing,
[2]Health Science University of Mongolia
[3]Ach Medical Institute , [4] Etugen Medical School

ABSTRACT

In the modern developed country, hospitals operate Nursing service and units which make home nursing assistances and services to the clients who were just discharged from the hospital and provide assistance to clients become healthy and to improve living quality of the clients. Purpose of the study is to determine needs for making home nursing services to the population in some province and soum. Conducted studies among the 1109 people from the 520 families in 17 soums of five provinces such as Orkhon, Bulgan, Arkhangai, Khuvsgul and Selenge. We have chosen the clients with anamnesis who are repeatedly served and treated at the hospital for our study. Questionnaire for citizens consists of 2 basic chapters including 17 questions which determine demographic information and needs of home nursing services. We asked and searched about needs of Home Care Nursing assistances under the 3 basic groups such as General nursing, Treatment nursing and Specialized nursing. After inserting study data into the SPSS-17 program, checked it by appropriate statistical methods (t, x^2, fisher exact) and checked if difference between groups and relations has statistical truth. 35.89 percent of clients who got involved to the study answered that they are interested in taking nursing and caring services at home. Also we consider needs for having home care nursing at home according to numerical indexes in the provinces involved to the study, clients mostly want to be injected by intramuscular (25.88%), intravenous (31.02%) and IV fluid (30.57%). As we consider specialized nursing assistances at home under the types of needs, training after health and assistance for people suffered with hemorrhage and injured people occupy major percent. Clients who got involved to the training, were asked question "With whom do you want to be made nursing assistance at home?" and 75.6% of them answered that they prefer nurses of family clinic.

Key words: Home Care Nursing, Nursing service, Family clinic nurse

INTRODUCTION

It was internationally accepted that main index of the quality and portions of medical assistance and service is continuation of medical assistances. [1-5]

Making assistance and services in the period of chronic acute disease of Clients who need to be hospitalized and treated at the hospital and providing a condition to continually make appropriate assistances to the clients are being as the current requirements at the medical organization. [9, 13]

In the modern developed country, hospitals operate Nursing service and units which make home care nursing assistances and services to the clients who were just discharged from the hospital and provide assistance to clients become healthy and to improve living quality of the clients. [2, 18]

With the purpose to implement Government operational program of the Mongolian Government in 2000, approved the "Home Care Nursing service and rules for caring and nursing" according to resolution # 136 by Health Minister dated on May 28, 2004 and indicated that nurses of the family clinic shall make home care nursing services [6, 7]. Even though, we searched that home care nursing services are not limited by nurses at the family clinic depending on that there are many units and specialized nurses who make home care nursing services in the world.

The purpose of this study was to determine the need for providing home care nursing services to the population in selected provinces and soums. In order to achieve these purposes, this study's objective were:

1. To ascertain the need for providing home care nursing services to citizens in the provinces and soums which were involved in the study
2. To determine which type of nursing care is required in homes
3. To understand the needs of nurses who provide home nursing services

MATERIALS AND METHODS

Conducted studies among the 1109 people from the 520 families in 17 soums of five provinces such as Orkhon, Bulgan, Arkhangai, Khuvsgul and Selenge and involved 2-3 people from one family in the study. We have chosen the clients with anamnesis who are repeatedly served and

***Correspounding author:**
Solongo D[1],
School of Nursing,
Ulaanbaatar University
E-mail: sookoo_d@yahoo.com

treated at the hospital for our study. We inquired 3 clients from 129 families and inquired 2 members of each 391 families. At the range of the objective, we jointly used numerical and quality methods in order to collect data and information. Questionnaire for citizens consists of 2 basic chapters including 17 questions which determine demographic information and needs of home care nursing services. We asked and searched about needs of Home care nursing assistances under the 3 basic groups such as General nursing, Treatment nursing and Specialized nursing.

We processed data of the questionnaire and studies by clients who included to the study using "SPSS-17" which is statistical processing software of the social study.

After inserting study data into the SPSS program, reviewed data mistakes, executed descriptive statistic analyses and determined trends of spread and focus, then raised hypothesis according to the objectives, checked it by appropriate statistical methods (t, x^2, fisher exact) and checked if difference between groups and relations has statistical truth.

RESULTS

35.89 percent of clients who got involved to the study answered that they are interested in taking nursing and caring services at home but 51.84 percent of people who got involved to the study in Orkhon province needs to have home nursing services and it is relatively high result. As we searched the demands for having home care nursing services, it is being increased with aging and females are outgoing.

Table 1. Need's of Home Health Care, by aimag

Need's of Home Health Care						
	Arkhangai	Bulgan	Selenge	Khuvsgul	Orkhon	Total
Yes	138	70	39	24	127	398
Percentage	43.67	33.02	25	13.33	51.84	35.89
No	178	142	117	156	118	711
Percentage	56.33	66.98	75	86.67	48.16	64.11
Total	**316**	**212**	**156**	**180**	**245**	**1109**

Need's of Home Health Care, sex			
	Male	Female	Total
Yes	147	251	398
Percentage	36.9	63.1	100.0
No	211	500	711
Percentage	29.7	70.3	100.0
Total	**358**	**751**	**1109**

4.7 percent of people who got involved to the study answered that they need assistance of specialized nurses for whole body wash for people who have serious illness, 2.6 percent of them requires assistance for eating and 2.5 percent of them requires assistance for going to toilets. And it occupies small amount of all people and it exists that needs of general nursing is less. But people make their own assistances to people who have serious illness because they are lack of knowledge which requires professional assistance to care of spoon fed people at home.

As we consider needs of home nursing by age groups, 9.54% of people at age of 20 years, 12.81% of people at the age of 21-30 years, 17.33% of people at the age of 31-40 years and 23.11% of people at the age of 41-50 years, 19.09% of people at the age of 51-60 years, 10.05% of people at the age of 61-70 years and 8.04% of people over 70 years answered that they need home nursing services and people at the age of 41-50 years have higher demand than other people.

Table 2. Need's of Home Health Care, by age group

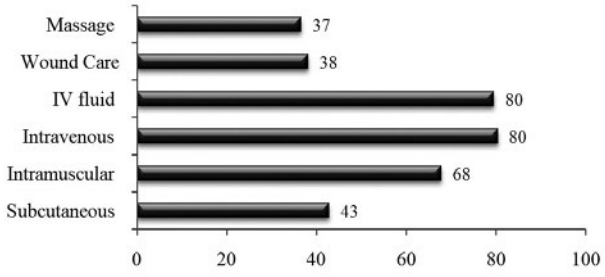
Need's of Home Health Care								
	>20	21-30	31-40	41-50	51-60	61-70	70<	Total
Yes	38	51	69	92	76	40	32	398
Percentage	9.5477	12.8141	17.3367	23.1156	19.0955	10.0503	8.0402	100.0000
No	100	141	142	148	106	45	29	711
Percentage	14.0647	19.8312	19.9719	20.8158	14.9086	6.3291	4.0788	100.0000
Total	138	192	211	240	182	85	61	1109

Also we consider treatment and nursing care needs at home in types and needs for IV fluid, intravenous and intramuscular injections at home has higher percent than other kinds of treatments.

Also we consider needs for having home nursing at home according to numerical indexes in the provinces involved to the study, clients mostly want to be injected by intramuscular (25.88%), intravenous (31.02%) and IV fluid (30.57%) but subcutaneous (16.68%), to be done massage (14.34%) and wound care (14.97%) and they are answered with relatively lower percent compared to other kind.

According to the study, people in Arkhangai province mostly offered for intramuscular, intravenous and IV fluid at home, people in Orkhon province offered for massaging and making all kinds of injections, but people in Khuvsgul province made lowest offer for these needs compared to other provinces.

Figure 1. Type of Nursing Care in Home Health Care



Also we searched by highest indexes of specialized nursing services by each province. 56.97 % of people in Orkhon province considered that it is right to receive Health education at home and this index was the highest but people in Selenge province don't need nursing services for people who are diseased with endocrine disorder.

As we consider specialized nursing assistances at home under the types of needs, health education and assistance for people suffered with hemorrhage and injured people occupy major percent.

Clients who got involved to the training, were asked question "With whom do you want to be made nursing assistance at home?" and 75.6% of them answered that they prefer nurses of Family Clinic, 30.2% of them prefer nurses of Specialized and professional hospitals, 13.1% of them prefer nurses of the Province Hospital and 4.7% of them prefer nurses of the Private hospital.

DISCUSSION

According to the study executed by Japanese scientist Murashima in 1998, widely spread diseases of the 124.310 people who received home nursing services include injuries, blood circulation system, specially 1/3 percent of them have brain and vessel diseases and malignant tumor and it is the same as our conclusion that assistance for people suffered with hemorrhage and injured people occupied most percent when we consider specialized nursing assistance by types of needs.

According to the study about needs of home nursing and caring services conducted in Japan in 1997, 87.5% of people need assistance to have bath, to replace locations, 77.9% of them need assistance to replace location, 74.0% of them needs assistance for wearing clothes and 69.8% of them need assistance for going to toilet and 53.6% of them need assistance for eating. Even though it occupies small percent of the population and shows lower needs of general nursing services but we can consider that people provide nursing assistance to spoon fed patients because they are lack of knowledge about that nursing for spoon fed patients requires professional assistances.

CONCLUSION

1. It was observed that 35.89% of participants wanted to receive home nursing assistance, and demands for home nursing increased with advancing age.
2. It was further noted that a high percentage of patients reported health problems from trauma and cerebrovascular accidents These patients reported ongoing health problems post-hospital discharge and would benefit from nursing assistance at home as well.
3. Based on the reports from 75.6% of survey respondents who indicated interest in home nursing assistance, it was concluded that it would be useful to train nurses to meet these needs.

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