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**Risk factors of TB in southern Iraq with specific  
focus on governorates with marshland populations**

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## Summary

**Background:** Tuberculosis (TB) ranks as the second leading cause of death from a single infectious agent. As a consequence of the marsh drainage and destruction, the largely displaced and widely persecuted marsh dwellers still suffer from economic loss, inadequate nutritional intake, and poor primary health care and absence of acceptable drinking water. There is no clear figure for influence of such residential areas and related risk factors on TB in Iraq. This study aims at exploring risk factors of TB in southern Iraq with special focus on marshlands population

**Methods:** this is a case control study conducted in three southern governorates of Iraq (Basrah, Thi qar and Misan). Cases were patients discovered during data collection time and control were matched for residence, age and sex enrolled while attending a primary health care center for complaints unrelated to TB. Data collection was during May to Mid September 3013 by structured interviews by a trained team of investigators. Multivariate logistic regressions adjusted for age and sex were used to measure the degree of associations between studied factors and occurrence of tuberculosis.

**Results:** Study sample composed of 455 new cases of TB and 444 controls. Males constituted 47% of both study groups. **Age older than 65** year increases the risk to have TB (OR= 2.7). **Over weight, obesity I, and obesity II**, decrease the risk of TB (OR< 1). **Under weight** increases the risk of TB (OR=2.4). Education level as **illiterate** or having not more than **primary** education increases the risk of TB (OR>1). **Hard worker** or **farmer**, **unemployment** and **students** increase the risk of TB (OR> 1). Positive **family history of TB** increases the risk of TB (OR> 1). The longer the duration of use of **Dexamethasone** medication the more the

risk of TB ( $OR \approx 1.1$ ). Living/residing in **other than urban setting** (or displaced) increases the risk of TB ( $OR=1.3$ ). Home built from **mud** increases the risk of TB ( $OR \approx 1.7$ ). Home with **no windows** increase the risk of TB ( $OR=2.2$ ). Increase in **family size** and increase in number of family members older than 15 year increases the risk of TB ( $OR > 1$ ). Drinking **non-sterile milk** increases the risk of having TB ( $OR=3.9$ ).

**Conclusions:** Predictors for tuberculosis include: age older than 65, under weight, single status, low education level, hard work/farming, student status and unemployment, family history of TB, long duration of Dexamethasone use, non-urban residence (rural, marshland or displace people), homes built from mud, homes not provided with windows (i.e. not proper ventilation or sun-light illumination), large family size, drinking non-sterile milk, use of kerosene as s cooking fuel.

## List of Contents

<b><u>Subject</u></b>	<b><u>Page No.</u></b>
Summary .....	I
List of tables.....	IV
List of figures.....	V
List of abbreviations.....	VI
Introduction.....	1
Subjects and Methods.....	3
Results.....	8
Discussion.....	26
Recommendations and Recommendations.....	31
References.....	32

## List of tables

<b><u>Table No.</u></b>		<b><u>Page No.</u></b>
1	Demographic distribution of three governorates (Basrah, Misan & Thiqr), Iraq, 2011.	3
2	Personal characteristics of study sample	9
3	Distribution of participants according to study group and to related medical history	16
4	Distribution of environmental factors for each study group.	17
5	Multivariate logistic analysis for personal characteristics.	20
6	Multivariate logistic analysis for items of medical history	23
7	Multivariate logistic analysis for environmental characteristics	24

## List of figures

<b><u>Figure No.</u></b>		<b><u>Page No.</u></b>
1	Frequency distribution (number of participants) according to study group and to sex.	11
2	Percent distribution of study sample according to study group and age category.	12
3	Percent distribution of participants according to study group and to BMI category.	13
4	Percent distribution of study sample according to study group and to family history of TB.	15

## **List of Abbreviations**

<b>BMI</b>	Body Mass Index
<b>CI</b>	Confidence Interval
<b>DOTS</b>	Directly Observed Therapy Short course
<b>HIV</b>	Human Immunodeficiency Virus
<b>OR</b>	Odd Ratio
<b>PHCCs</b>	Primary Health Care Centers
<b>SD</b>	Standard Deviation
<b>SPSS v20</b>	Statistical Package for Social Sciences version 20
<b>TB</b>	Tuberculosis
<b>NTP</b>	National Tuberculosis Control Program
<b>WHO</b>	World Health Organization



## **1. Introduction**

Tuberculosis (TB) is contagious and airborne. It ranks as the second leading cause of death from a single infectious agent, after the human immunodeficiency virus (HIV). Around 8.6 million people fell ill with TB in 2012, including 1.1 million cases among people living with HIV. In 2012, 1.3 million people died from TB [1]. In Iraq, WHO estimates 45 new and relapsed TB cases and more than 3000 death annually [2].

The South of Iraq which consists of four governorates (Misan, Thiqr, Basrah, and Al-Muthanna) has three out of four governorates have marshland areas (Misan, Thiqr, and Basrah). The population of these three governorates exceeds five million with people living in Marshland representing almost 20% of this population. Marshlands in south Iraq represent challenge due to poor health services, poor infrastructure development and population living near polluted sites and industrial plants. As a consequence of the marsh drainage and destruction, the largely displaced and widely persecuted marsh dwellers still suffer from economic loss, inadequate nutritional intake, and poor primary health care and absence of acceptable drinking water.

Located in southern Iraq in the areas surrounding the confluence of the Euphrates and Tigris Rivers in the Governorates of Basrah, Missan and Thi-Qar, the Iraqi Marshlands constitute the largest wetland ecosystem in the Middle East, and are of environmental and socio-cultural significance. The Marshlands have been damaged significantly by drainage operations undertaken by the former Iraqi regime and upstream dam construction. In 2001, United Nations Environment Program (UNEP) alerted the international community to the destruction of the Marshlands when it released satellite images showing that 90 percent of the Marshlands had already been lost. By the time the former Iraqi regime collapsed in 2003, these Marshlands had been almost entirely destroyed. Extensive ecological damage to this area, with the accompanying displacement of much of the indigenous population, was identified as one of Iraq's major environmental and humanitarian disasters in post-conflict assessments by international organizations [3].

Though southern part of country contains underprivileged population like those living in marshlands, national statistics of TB burden in Iraq do not distinguish between urban, rural, marshland residences or identify displaced people; so there is no clear figure for influence of such residential areas and related risk factors on TB in Iraq.

Although DOTS is implemented in southern governorates in Iraq, challenges facing TB control still exist, such as access to health care, low education among people, social factors related to TB stigma in addition to economic factors.

According to literatures, variable that leads to causation of TB include:

- I. Demographic factors: low education level [4, 5], income [5], employment [4].
- II. Clinical factors: malnutrition and nutritional deficiencies [5], smoking [2,8], diabetes [4,5, 6], HIV[7], household contact [7].
- III. Environmental factors: living and working conditions ( such as housing) [8, 9], crowding [ 4, 7], poverty [4,9], poor ventilation [ 9], use of solid fuel for cooking [10]

Some known environmental factors that contribute towards spread of TB are population living in poor slums, internally displaced persons (IDPs), population in marshlands where there is limited or no access to TB treatment services. However, little is known about many other risk factors within these areas in Iraq that may intensify advancement of the disease. This study is designed in order to determine these risk factors in marshlands and non-marshland areas in southern governorates of Iraq to prepare for effective interventions in such areas. This study will identify risk factors, high risk groups and targets for future interventions.

### **Objectives of the study:**

#### **General objective:**

Exploring risk factors of TB in southern Iraq with special focus on marshlands population

#### **Specific objectives:**

1. Determine risk factors of TB in southern governorates
2. Identify high risk groups for TB in southern governorates

## 2. Subjects and Methods:

### 2.1.Settings:

This study conducted in three southern governorates of Iraq (Basrah, Thiqr and Misan). The population of this area is (5340395). Marshlands inhabitants represent 22% of the total population of these three governorates. Total number of primary health care centers (PHCCs) in these governorates is 165 units.

Out of 18 districts, six of them are marshland areas containing marshland population and number of TBMUs, PHCCs and TB cases registered during 2011 (table 1).

**Table 1: Demographic distribution of three governorates (Basrah, Misan & Thiqr), Iraq, 2011.**

Items	Basrah	Misan	Thiqr	Total
<b>Total Population (N)</b>	2660215	920027	1760153	5340395
<b>Marshland (N)</b>	303032	338129	518465	1159626
<b>Percent</b>	11%	37%	29%	22%
<b>Total TBM units (N)</b>	8	4	6	18
<b>Marshland (N)</b>	2	2	2	6
<b>Percent</b>	25%	50%	33%	33%
<b>Total TB cases (N)</b>	655	201	620	1476
<b>Marshland (N)</b>	105	65	167	337
<b>Percent</b>	16%	32%	27%	23%

## **2.2.Study design:**

This is Case Control Study that cases (new TB cases) registered in NTP registered during time of data collection from the three governorates (Basrah, Misan and Thiqr) and control (non-TB patients and non-TB suspects attending PHCCs belong to same three governorates during the time of data collection) were requested to participated in the study.

## **2.3.Eligibility:**

**2.3.1. Case:** All TB cases older than 14 years who were newly registered in National TB Control Program in southern governorates from the day of the implementation of the study

**2.3.2. Control:** All Patients older than 14 years attended PHCCs in the same locality of cases without being a case of TB and or TB suspects.

Controls were chosen in a way they match cases in age (not more than five years older or younger than TB cases), sex, and locality (nearest PHCC to the cases locality).

### **2.3.3. Exclusion criteria:**

A) General exclusion criteria:

- a. Severely ill patient that need hospitalization
- b. Disagreement for engagement in the study.

B) Cases: Relapse and retreatment patients

## **Sample Size:**

From the review of literatures and upon discussion it was assumed that the least prevalent risk factor in control group is the prevalence of solid fuel in the population= 10% compare to prevalence in the cases: 18% and Odds ratio= 1.8 [11]

Using EpiInfo program at confidence level of 95%, power of 80%, and compensating for non-response rate of 15%; the calculated sample is 872 (436 cases and 436 controls).

## **2.4.Sampling Technique:**

**2.4.1.** Selection of cases: From the Day one of data collection period (1<sup>st</sup> May, 2013) all eligible new TB cases registered in NTP in three southern governorates (Basrah, Misan and Thiqr) will be interviewed

consecutively as cases in this study until the desired number of cases reached.

**2.4.2.** Selection of controls: accidental sampling was used in a way that eligible patients attending nearest PHCCs to study cases. Controls were chosen every two weeks in accordance to cases sample.

## **2.5.Period of data collection:**

Starting from May, 2013 data collection planned either to continue six months till achieving intended sample size. Data collection was ended on mid September 2013 on fulfilling required sample size.

## **2.6.Data Collection methods, instruments used, measurements:**

**2.6.1.** A structured interview used to collect data from participants using a structured questionnaire form in written in Arabic (annex 1) –English form is provided as well (annex 2). The same questionnaire form was used for collecting information from both study groups (cases and control). This questionnaire included the following data:

- Personal information: including age, gender, marital status, education level, occupation, income, residence, consumption of raw milk
- Family factors: Total number of households and number of adult households, Family history of TB
- Housing condition: Building materials of the house, number of rooms per house, number of windows per room. Presence of separated kitchen, type of fuel used in cooking, presence of livestock (inside or outside home).
- Medical History: BCG scar, Diabetes Mellitus, Chest diseases, anemia, drugs (corticosteroids), Cancer.
- Environmental conditions: Closeness of house to brick factory, industrial plant or oil field.
- All subjects weighted with calibrated weighing scale and height measured using a standardized ruler.

The questionnaire was pre-tested before carrying out the study.

**2.6.2.** Field investigators (annex 3) were trained on questionnaire filling before field work implementation to ensure quality and comparability of collected data. Training report is attached (annex 4).

## **2.7.Statistical Analysis:**

Data input was done by two trained information technology personnel on an already prepared excel file, and then data accuracy was checked by the principal investigator. Data transferred to a statistical package (Statistical Package for Social Sciences-Version 20 –SPSS v20) for data presentation and analysis.

Discrete values presented as numbers and percentages and continuous variables presented as mean  $\pm$  SD (standard deviation).

Chi-square test for independence used to test the significant of observed associations. T-test for two independent samples used to test the significance of difference in means, and whenever distribution normality was under question; Mann-Whitney test replaced t-test.

The strength of association of potential predictor variables for occurrence of tuberculosis was analyzed by multivariate binary logistic regressions using "enter" method. All factors were adjusted for age and sex. Reference values were: female for male sex, age up to 45 year for age group, normal weight for BMI categories, Basrah for governorate, married for marital status, higher than secondary for education level, employee for occupation, more than million for monthly income, non-smoker for smoke cigarette, non-smoker for smoke Hubble-Bubble, not got TB before for "got TB before", negative history for family history of TB, not immunized for BCG immunization, no scar for scar of BCG, not have allergic bronchitis for allergic bronchitis, no tumor for "Tumor", not diabetic for diabetes mellitus, no history of anemia for history of anemia, no history of cortisone therapy for cortisone therapy, negative history for history of use of dexton, rural for area of recent residence, urban for other than urban residence, distance up to 10 km for distance to nearest health facility, brick for "home is build from", more than one window for number of window per room, drink sterile milk for "drink non-sterile milk", none for pollution at workplace, not for residence near oil or brick production facility, natural gas for cooking fuel, Yes for place of cooking at home, none for livestock farming.

Level of significance was set at 0.05.

**2.8.Ethical considerations:**

**2.8.1.** Ethical clearance was obtained from the three health directorates of the three governorates; Basrah (annex 5), Misan (annex 6), and Thi-Qar (annex 7).

**2.8.2.** An informed consent was obtained from each participant after ensuring confidentiality and anonymity of data. This form used during the study with Arabic language (annex 8). An English copy is provided as well (annex 9)

**2.9. Funding:** this study was funding by WHO through 2011-2013 Operational Research grants.

### 3. Results:

Study sample composed of 455 new cases of TB and 444 controls. Males constituted 47% of both study groups ( $P > 0.05$ , table 2, figure 1).

Mean age for TB cases group was  $41.1 \pm 17.4$  year and for control group was  $40.4 \pm 14.3$  year with no significant difference between these two means ( $P > 0.05$ , table 2). Both study groups (cases and control) had age distribution characterized by dominance of the younger age group (15-45 year) (62.4% in cases and 67.3% in control), and people older than 65 year were the smallest age subgroup in this study. **Age older than 65** year was encountered among cases as twice as in control group (6.5% in cases and 12.5% in control) and this age distribution was significant ( $P < 0.05$ , table 2, figure 2).

Mean **Body Mass Index** (BMI) was  $23.0 \pm 5.9$   $\text{kg/m}^2$  for cases and it was significantly lower than mean BMI in control group which was  $25.9 \pm 7.8$   $\text{kg/m}^2$  ( $P < 0.05$ , table 2). **Underweight** condition was found more among TB cases (19% in cases and 6.9% in control group) and overweight and obesity observed more among control (70% in control and 30.5%) and this distribution is found significant in this study ( $P < 0.05$ , table 2, figure 3).

A large proportion of participants were from Thiqr (46.4% of cases and 47.3% of control) and least from Misan (13.2% of cases and 14.4% of control). There was not significant association between governorate of residence and having TB disease ( $P > 0.05$ , table 2). Details of participants distribution according to districts is illustrated in annex.

Regarding occupation; the observed distribution was significant. Interesting findings were **employed** people were double among controls compared to cases (24.6% in control and 11.9% in cases), and **housewives** were much more among cases compared to control group (43.4% in cases and 28.2% among control) ( $P < 0.05$ , table 2).

There was no significant association between monthly income and disease status in this study ( $P > 0.05$ , table 2).



**Table 2: Personal characteristics of study sample.**

Variables	Study Group				Test Statistic	P Value
	Case N=455 100.0%		Control N=444 100.0%			
Sex					0.000 <sup>A</sup>	0.991
• Male	214/455	47.0%	209/444	47.0%		
• Female	241/455	53.0%	235/444	53.0%		
Age (year); M±SD	41.1±17.4		40.4±14.3		0.587 <sup>B</sup>	0.557
Age Category					9.386 <sup>A</sup>	<b>0.009</b>
• 15-45 year	284/455	62.4%	299/444	67.3%		
• 46-64 year	114/455	25.1%	116/444	26.1%		
• ≥ 65 year	57/455	12.5%	29/444	6.5%		
BMI (kg/m <sup>2</sup> ); M±SD	23.0±5.9		25.9±7.8		-6.310 <sup>B</sup>	<b>&lt;0.001</b>
BMI Categories					53.398 <sup>A</sup>	<b>&lt; 0.001</b>
• Underweight	85/455	19.1%	30/434	6.9%		
• Normal	224/455	50.3%	185/434	42.6%		
• Over weight	96/455	21.6%	134/434	30.9%		
• Obesity I	30/455	6.7%	62/434	14.3%		
• Obesity II	5/455	1.1%	7/434	1.6%		
• Morbid Obesity	5/455	1.1%	16/434	3.7%		
Governorate (Residence)					0.551 <sup>A</sup>	0.759
• Basrah	184	40.4%	170	38.3%		
• Misan	60	13.2%	64	14.4%		
• Thiqr	211	46.4%	210	47.3%		
Marital Status					20.507 <sup>A</sup>	<b>&lt; 0.001</b>
• Divorced/Separated	8/454	1.8%	2/444	0.5%		
• Widow	42/454	9.3%	21/444	4.7%		
• Single	88/454	19.4%	57/444	12.8%		
• Married	316/454	69.6%	364/444	82.0%		
Education					27.153 <sup>A</sup>	<b>&lt; 0.001</b>
• Illiterate	130/454	28.6%	74/444	16.7%		
• Read & write	77/454	17.0%	93/444	20.9%		
• Primary School	133/454	29.3%	122/444	27.5%		
• Secondary School	92/454	20.3%	109/444	24.5%		
• Higher than Secondary	22/454	4.8%	46/444	10.4%		

<sup>A</sup>Chi square test for independence  
<sup>B</sup>t test for two independent variables

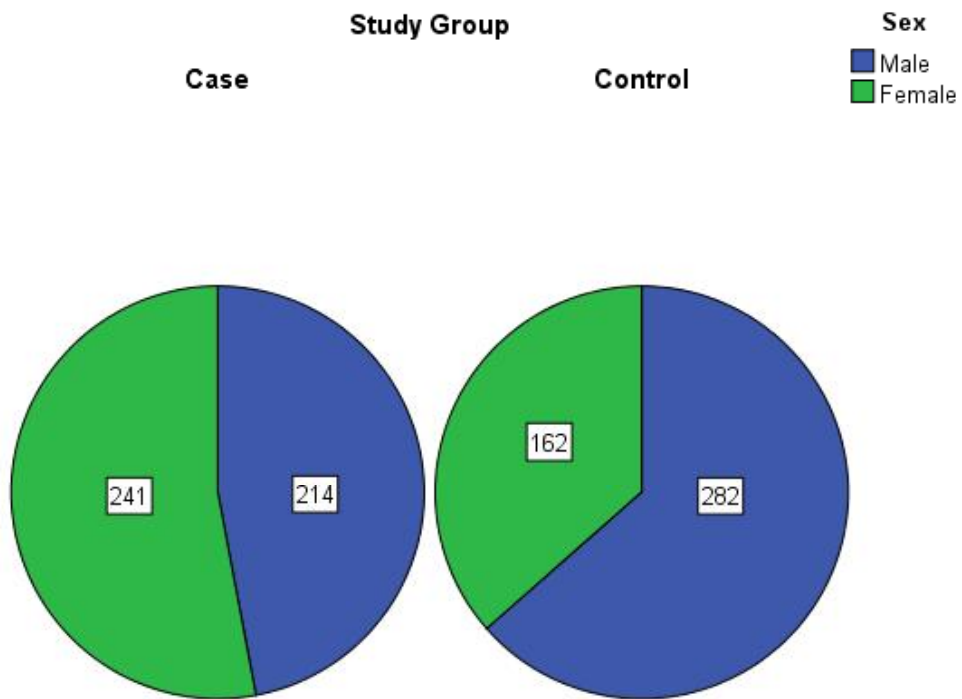
<sup>A</sup>Chi square test for independence

<sup>B</sup>t test for two independent variables

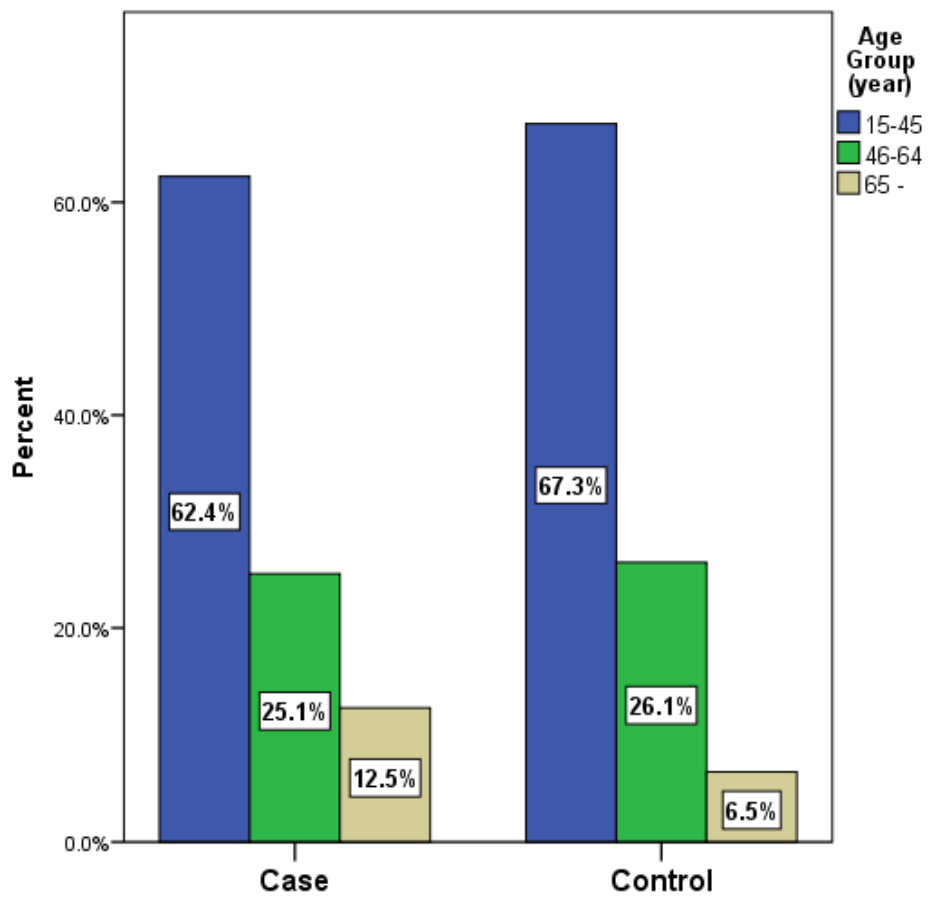
Table 2: Continue.

Variables	Study Group				Test Statistic	P Value
	Case N	100.0%	Control N	100.0%		
<b>Occupation</b>					39.351 <sup>A</sup>	< 0.001
• Employee	54/454	11.9%	109/443	24.6%		
• Hard worker/Farmer	60/454	13.2%	65/443	14.7%		
• Retired	32/454	7.0%	40/443	9.0%		
• Free Work	3/454	0.7%	3/443	0.7%		
• Student	33/454	7.3%	20/443	4.5%		
• Unemployed	53/454	11.7%	55/443	12.4%		
• Housewife	197/454	43.4%	125/443	28.2%		
• Military	14/454	3.1%	15/443	3.4%		
• Others	8/454	1.8%	11/443	2.5%		
<b>Monthly income (ID)</b>					2.328 <sup>A</sup>	0.312
• < 250,000	217/452	48.0%	195/442	44.1%		
• 250,000-1 million	212/452	46.9%	229/442	51.8%		
• > 1 million	23/452	5.1%	18/442	4.1%		
<b>Smoke Cigarettes</b>	103/452	22.8%	119/443	26.9%	1.992 <sup>A</sup>	0.158
❖ Number of daily smoked cigarettes					0.054 <sup>A</sup>	0.817
• Up to 20 cigarettes	51/89	57.3%	66/112	58.9%		
• > 20 cigarettes	38/89	42.7%	46/112	41.1%		
❖ Years of smoking cigarettes; M±SD	18.6±13.7		12.8±9.6		3.557 <sup>B</sup>	<0.001
❖ Duration					8.630 <sup>A</sup>	0.003
• Up to 10 years	30/90	33.3%	60/111	54.1%		
• > 10 years	60/90	66.7%	51/111	45.9%		
❖ Number of daily smoked cigarettes; M±SD	27.6±12.2		28.0±16.2		-0.191 <sup>B</sup>	0.849
<b>Smoke Hubble-Bubble</b>	20/446	4.5%	41/442	9.3%	7.967 <sup>A</sup>	0.005
❖ Years of smoking Hubble-Bubble; M±SD	3.3±3.3		3.0±2.2		296.000 <sup>C</sup>	0.595
❖ Duration Category					0.993 <sup>A</sup>	0.319
• Up to 2 years	13/18	72.2%	21/36	58.3%		
• > 2 years	5/18	27.8%	15/36	41.7%		

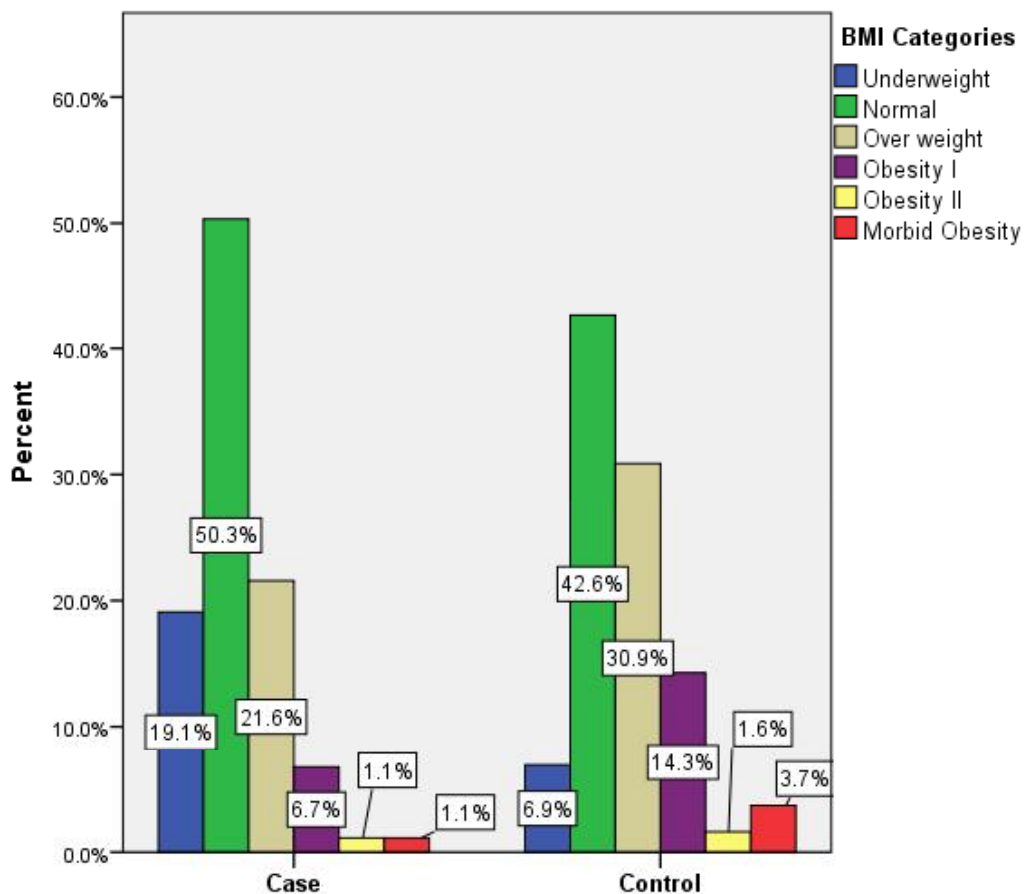
<sup>A</sup>Chi square test for independence<sup>B</sup>t test for two independent variables<sup>C</sup>Mann-Whitney test



**Figure 1: Frequency distribution (number of participants) according to study group and to sex.**



**Figure 2: Percent distribution of study sample according to study group and age category.**



**Figure 3: Percent distribution of participants according to study group and to BMI category.**

According to this study; both being cigarettes smoker and number of daily smoked cigarettes were not associated with tuberculosis ( $P > 0.05$ , table 2) while **duration of smoking cigarettes** was significantly higher in TB cases ( $18.6 \pm 13.7$  year) than in control group ( $12.8 \pm 9.6$  year). As well as smoking cigarettes for more than 10 years is significantly associated with tuberculosis (66.7% in cases and 45.9% in control group) ( $P < 0.05$ , table 2).

Smoking **Hubble-Bubble** was significantly associated with tuberculosis ( $P < 0.5$ , table 2). Duration of this type of smoking showed no significant influence on this disease ( $P > 0.05$ , table 2).

There was no significant association between having TB disease before recent TB disease ( $P > 0.05$ , table 3).

**Family history of TB** is significantly associated with recent TB disease (22.4% of cases have a positive family history for TB compared to 12.7% in control group) ( $P < 0.05$ , table 3, figure 4).

History positive for **BCG** immunization and finding BCG scar were significantly found less frequent in cases than in control group ( $P < 0.05$ , table 3).

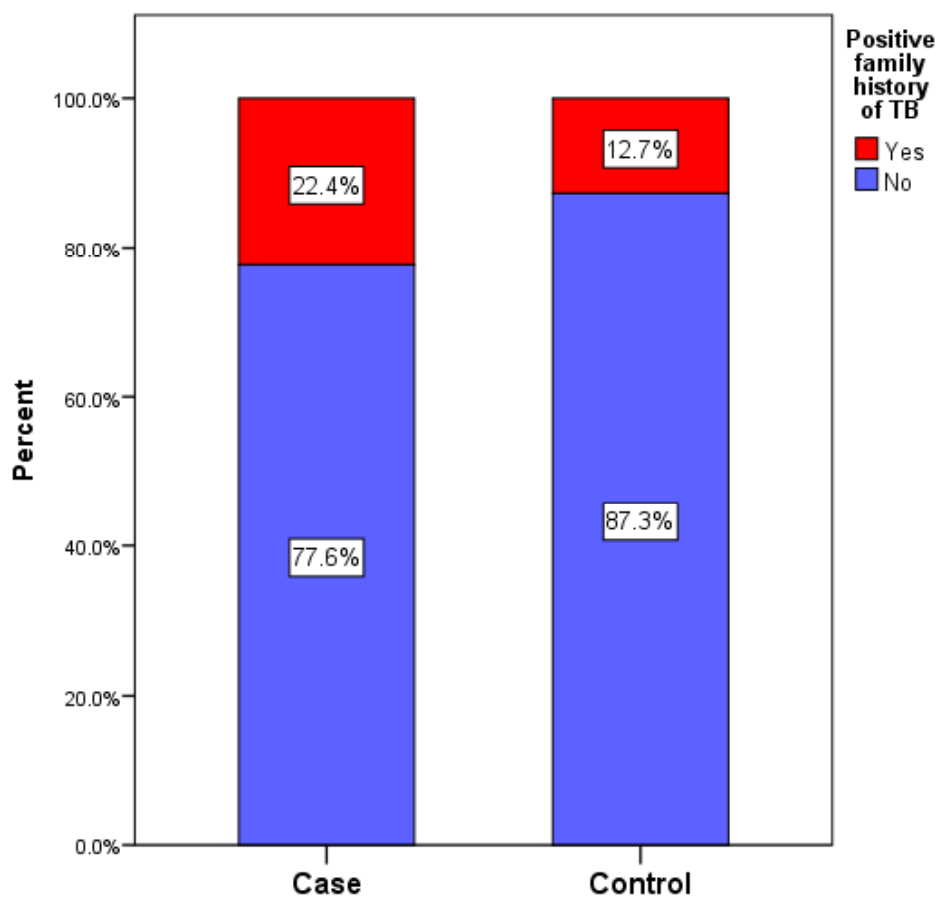
This study found **allergic bronchitis** is less frequent in TB cases than in control ( $P < 0.05$ , table 3).

Regarding having positive history for tumors; there was no significant association between tumors and TB disease ( $P > 0.05$ , table 3).

**Diabetes Mellitus** disease was significantly higher among cases (16.6%) than in control (10.2%) ( $P < 0.05$ , table 3). For diabetic patients; there was no significant difference in mean duration between cases and control ( $P > 0.05$ , table 2).

History of anemia showed no significant association with TB ( $P > 0.05$ , table 3).

History of cortisone or steroid therapy or duration of use of this therapy was not significant with TB disease ( $P > 0.05$ , table 3).



**Figure 4: Percent distribution of study sample according to study group and to family history of TB.**

**Table 3: Distribution of participants according to study group and to related medical history.**

Variables	Study Group				Test Statistic	P Value
	Case		Control			
	N	100.0%	N	100.0%		
Got TB before	9/422	2.1%	18/438	4.1%	2.762 <sup>A</sup>	0.097
Family history of TB	101/451	22.4%	56/441	12.7%	14.454 <sup>A</sup>	<0.001
Given BCG	306/451	67.8%	344/441	78.0%	11.632 <sup>A</sup>	0.001
Scar of BCG	266/450	59.1%	303/441	68.7%	8.887 <sup>A</sup>	0.003
Allergic Bronchitis	91/446	20.4%	126/437	28.8%	8.461 <sup>A</sup>	0.004
❖ Duration of allergic bronchitis (years); M±SD	6.8±8.1		6.2±7.1		2329.500 <sup>C</sup>	0.734
Tumors	9/448	2.0%	8/437	1.8%	0.037 <sup>A</sup>	0.847
Diabetes	75/452	16.6%	45/442	10.2%	7.906 <sup>A</sup>	0.005
❖ Duration of diabetes (years); M±SD	5.9±4.4		5.3±5.4		994.500 <sup>C</sup>	0.254
History of Anemia	113/445	25.4%	100/442	22.6%	1.506 <sup>A</sup>	0.471
History of Cortisone or steroid treatment	39/451	8.6%	52/442	11.8%	2.996 <sup>A</sup>	0.224
❖ Duration of steroid use (years); M±SD	3.8±3.7		3.2±3.7		572.500 <sup>C</sup>	0.512
History of use of Dexon	65/442	14.7%	78/438	17.8%	1.579 <sup>A</sup>	0.454
❖ Duration of Dexon use (months); M±SD	13.2±21.3		4.1±6.1		853.500 <sup>C</sup>	<0.001

<sup>A</sup>Chi square test for independence  
<sup>B</sup>t test for two independent variables  
<sup>C</sup>Mann-Whitney test



Use of **Dexon** (Dexamethaxone) syrup or tablets was not significant with having TB ( $P > 0.05$ , table 3). TB patients who use dexon medications significantly have two times **longer use of dexon medication** than control ( $13.2 \pm 21.3$  months in TB cases and  $4.1 \pm 6.1$  months in control).

Area of recent residence showed no significant association with TB disease ( $P > 0.05$ , table 4) and TB cases were significantly more frequently **residing near to health facilities** than control ( $P < 0.05$ , table 4).

Regarding the structure of the home of participants; source of building materials (e.g. plates, bricks, etc.) showed no significant association with TB status ( $P > 0.05$ , table 4).

It was significant to find TB cases more to have **rooms without windows** than control ( $P < 0.05$ , table 4).

**Family size** and number of family members older than 15 found to be higher in cases group while **crowding index** found higher among control group ( $P < 0.05$ , table 4).

Frequency of drinking **non-sterile milk** was significantly higher among TB cases (19.0%) than in control (5.7%) ( $P < 0.05$ , table 4).

Tuberculosis patient at southern governorates in Iraq are less frequent to work in polluted environment ( $P < 0.05$ , table 4).

Residence nearby (within 1-2 km) a facility of oil production or bricks production, type of cooking fuel, home has or has not a place for cooking, and raising livestock (whether inside or outside home) are not significantly associated with TB disease ( $P > 0.05$ , table 4).

Using Odds Ratio (OR) as indirect estimator for relative risk; after adjusting for age and sex; the significant findings were:

- **Age older than 65** year increases the risk to have TB (OR= 2.7, table 5).
- **Over weight, obesity I, and obesity II**, decrease the risk of TB (OR< 1, table 5).

**Table 4: Distribution of environmental factors for each study group.**

Variables	Study Group				Test Statistic	P Value
	Case		Control			
	N	100.0%	N	100.0%		
Area of recent residence					4.647 <sup>A</sup>	0.325
• Displaced from same governorate	23/454	5.1%	20/440	4.5%		
• Displaced from other governorate	6/454	1.3%	9/440	2.0%		
• Marshland	20/454	4.4%	13/440	3.0%		
• Rural	137/454	30.2%	114/440	25.9%		
• Urban	268/454	59.0%	284/440	64.5%		
Other than urban residence*	186/454	41.0%	156/440	35.5%	2.877 <sup>A</sup>	0.090
Distance to nearest health facility					12.437 <sup>A</sup>	0.006
• Up to 10 Km	373/454	82.2%	332/443	74.9%		
• 11-20 Km	49/454	10.8%	48/443	10.8%		
• 21-30 km	21/454	4.6%	43/443	9.7%		
• > 30 km	11/454	2.4%	20/443	4.5%		
Home is built from					7.594 <sup>A</sup>	0.055
• Reeds & papyrus	4/452	0.9%	1/440	0.2%		
• Clay	50/452	11.1%	31/440	7.0%		
• Plates	5/452	1.1%	2/440	0.5%		
• Bricks	393/452	86.9%	406/440	92.3%		
Number of windows per room					6.916 <sup>A</sup>	0.031
• No windows	25/453	5.5%	12/443	2.7%		
• Only one	292/453	64.5%	315/443	71.1%		
• More than one	136/453	30.0%	116/443	26.2%		
Family size	8.8±4.3		8.3±3.5		878 <sup>B</sup>	0.048
Number of family members older than 15	5.0±3.2		4.1±2.9		863 <sup>B</sup>	<0.001
Crowding Index	2.9±1.3		3.0±1.4		860 <sup>B</sup>	0.049
Drink non-sterile milk	86/452	19.0%	25/442	5.7%	36.737 <sup>A</sup>	<0.001

<sup>A</sup>Chi-square test for independence

<sup>B</sup>t-test for two independent variables

\*displace, marshland or rural residence.

**Table 4: Continue.**

Variables	Study Group				Test Statistic	P Value
	Case		Control			
	N	100.0%	N	100.0%		
<b>Pollution at workplace</b>					14.820 <sup>A</sup>	<b>0.002</b>
• Dust and sands	118/449	26.2%	159/436	36.3%		
• Smoke	29/449	6.4%	19/436	4.3%		
• Exposure to animals	29/449	6.4%	14/436	3.2%		
• No pollution	273/449	60.7%	244/436	55.7%		
<b>Residence near (within 1-2 km) a facility producing oil or bricks</b>	28/453	6.2%	26/442	5.9%	0.035 <sup>A</sup>	0.851 <sup>b</sup>
<b>Cooking Fuel</b>					5.210 <sup>A</sup>	0.157
• Natural Gas	402/453	88.7%	411/443	92.8%		
• Kerosene	16/453	3.5%	7/443	1.6%		
• Biomass fuel*	12/453	2.6%	8/443	1.8%		
• Mixed	23/453	5.1%	17/443	3.8%		
<b>Home has a place for cooking</b>	414/448	92.4%	417/441	94.6%	1.680 <sup>A</sup>	0.195 <sup>b</sup>
<b>Livestock</b>					2.226 <sup>A</sup>	0.329
• Inside home	83/453	18.3%	70/441	15.9%		
• Outside home	63/453	13.9%	52/441	11.8%		
• None	307/453	67.8%	319/441	72.3%		

<sup>A</sup>Chi-square test for independence

\*solid organic fuel (animal excreta, wood, etc.)

<sup>A</sup>Chi-square test for independence

\*solid organic fuel (animal excreta, wood, etc.)

**Table 5: Multivariate logistic analysis for personal characteristics.**

Variables	Wald Statistic	P value	OR	OR 95% CI	
				Lower	Upper
<b>Age</b>	15.060	<b>&lt;0.001</b>	<b>1.009</b>	1.004	1.013
<b>Age Group</b>	17.758	<b>&lt;0.001</b>			
• 46-64	2.397	0.122	1.250	0.942	1.657
• ≥ 65	16.592	<b>&lt;0.001</b>	<b>2.661</b>	1.662	4.262
<b>BMI</b>	9.941	<b>0.002</b>	<b>0.980</b>	0.968	0.992
<b>BMI Categories</b>	48.856	<b>&lt;0.001</b>			
• Overweight	8.080	<b>0.004</b>	<b>0.633</b>	0.462	0.868
• Obesity I	14.698	<b>&lt;0.001</b>	<b>0.392</b>	0.242	0.632
• Obesity II	0.910	0.340	0.566	0.176	1.823
• Obesity III	6.046	<b>0.014</b>	<b>0.275</b>	0.098	0.769
• Under weight	14.649	<b>&lt;0.001</b>	<b>2.445</b>	1.547	3.864
<b>Governorate</b>	0.083	0.959			
• Misan	0.078	0.781	0.946	0.638	1.401
• Thiqr	<b>&lt;0.001</b>	0.990	0.998	0.753	1.324
<b>Marital Status</b>	17.744	<b>&lt;0.001</b>			
• Divorced/Separated	2.354	0.125	3.404	0.712	16.274
• Widow	1.972	0.160	1.524	0.846	2.745
• Single	13.781	<b>&lt;0.001</b>	<b>1.968</b>	1.377	2.813
<b>Education Level</b>	17.437	<b>0.002</b>			
• Illiterate	12.348	<b>&lt;0.001</b>	<b>2.408</b>	1.475	3.932
• Read & Write	0.828	0.363	1.221	0.795	1.875
• Primary	9.235	<b>0.002</b>	<b>1.807</b>	1.234	2.646
• Intermediate/Secondary	2.408	0.121	1.373	0.920	2.049
<b>Occupation</b>	15.756	<b>0.046</b>			
• Hard worker/farmer	5.522	<b>0.019</b>	<b>1.750</b>	1.097	2.790
• Retired	1.381	0.240	1.447	0.781	2.679
• Free work	.624	0.430	1.931	0.377	9.887
• Student	8.536	<b>0.003</b>	<b>2.424</b>	1.338	4.390
• Unemployed	3.914	<b>0.048</b>	<b>1.624</b>	1.005	2.624
• Housewife	3.776	0.052	1.463	0.997	2.146
• Military	2.048	0.152	1.782	0.808	3.932
• Others	0.318	0.573	1.318	0.505	3.439

Reference categories: female for male sex, age up to 45 year for age group, normal weight for BMI categories, Basrah for governorate, married for marital status, higher than secondary for education level, employee for occupation.

All above were adjusted for both age and sex.

**Table 5: Continue.**

Variables	Wald Statistic	P value	OR	OR 95% CI	
				Lower	Upper
<b>Monthly Income (ID)</b>	1.038	0.595			
• < 250,000	0.649	0.420	1.158	0.811	1.654
• 250,000-Million	0.019	0.891	1.026	0.711	1.481
<b>Smoke Cigarettes</b>	0.812	0.367	1.174	0.828	1.664
- Number of daily smoked cigarettes	1.085	0.298	0.924	0.796	1.072
- Duration of smoking cigarettes	0.153	0.696	1.056	0.805	1.385
<b>Smoke Hubble Bubble*</b>	2.603	0.107	0.625	0.353	1.106
- Duration of smoking Hubble Bubble	1.076	0.300	0.200	0.010	4.179

Reference categories: more than million for monthly income, non-smoker for smoke cigarette, non-smoker for smoke Hubble-Bubble.

All variable were adjusted for both age and sex

Adjusted for smoking cigarettes in addition to age and sex.

- **Under weight** increases the risk of TB (OR=2.4, table 5).
- Education level as **illiterate** or having not more than **primary** education increases the risk of TB (OR> 1, table 5).
- **Hard worker** or **farmer**, **unemployment** and **students** increase the risk of TB (OR> 1, table 5).
- Positive **family history of TB** increases the risk of TB (OR> 1, table 5).
- Allergic bronchitis found to decrease the risk of TB in this study (OR=0.6, table 6).
- The longer the duration of use of **dexon** medication the more the risk of TB (OR≈ 1.1, table 6).
- Living/residing in **other than urban setting** (or displaced) increases the risk of TB (OR=1.3, table 7).
- Home built from **mud** increases the risk of TB (OR≈ 1.7, table 7).
- Home with **no windows** increase the risk of TB (OR=2.2, table 7).
- Increase in **family size** and increase in number of family members older than 15 year increases the risk of TB (OR > 1, table 7).
- Drinking **non-sterile milk** increases the risk of having TB (OR=3.9, table 7).
- Workplace environment characterized by presence of sand/dust decrease the risk of TB (OR= 0.8, table 7).

**Table 6: Multivariate logistic analysis for items of medical history.**

Variables	Wald Statistic	P value	OR	OR 95% CI	
				Lower	Upper
<b>Got TB Before</b>	2.545	0.111	0.511	0.224	1.166
<b>Positive Family History of TB</b>	14.019	<b>&lt;0.001</b>	<b>1.966</b>	1.380	2.802
<b>BCG immunization</b>	0.550	0.458	0.832	0.511	1.354
- Scar of BCG	0.004	0.950	0.985	0.616	1.575
<b>Allergic Bronchitis</b>	8.817	<b>0.003</b>	<b>0.622</b>	0.455	0.851
-Duration Allergic Bronchitis	0.265	0.607	1.012	0.968	1.057
<b>Tumor</b>	0.042	0.838	1.106	0.418	2.925
<b>Diabetes mellitus</b>	0.276	0.599	1.592	0.281	9.004
-Duration of diabetes mellitus	0.442	0.506	1.031	0.941	1.130
<b>History of anemia</b>	0.812	0.368	1.076	0.918	1.260
<b>Cortisone Therapy</b>	2.967	0.085	1.143	0.982	1.332
-Duration of Cortisone Therapy	0.615	0.433	1.054	0.924	1.204
<b>History of Use of Dexon</b>	0.658	0.417	0.860	0.596	1.239
-Duration of Dexon use	5.462	<b>0.019</b>	<b>1.063</b>	1.010	1.118

Reference categories: not got TB before for "got TB before", negative history for family history of TB, not immunized for BCG immunization, no scar for scar of BCG, not have allergic bronchitis for allergic bronchitis, no tumor for "Tumor", not diabetic for diabetes mellitus, no history of anemia for history of anemia, no history of cortisone therapy for cortisone therapy, negative history for history of use of dexon.

All variable were adjusted for both age and sex.

**Table 7: Multivariate logistic analysis for environmental characteristics.**

Variables	Wald Statistic	P value	OR	OR 95% CI	
				Lower	Upper
<b>Area of recent residence</b>	6.063	0.194			
• Displaced from same governorate	0.690	0.406	1.305	0.697	2.443
• Displaced from other governorate	0.231	0.631	0.771	0.267	2.226
• Marshland	2.653	0.103	1.833	0.884	3.799
• Rural	3.424	0.064	1.331	0.983	1.801
<b>Other than urban Residence*</b>	4.247	<b>0.039</b>	<b>1.332</b>	1.014	1.750
<b>Distance to nearest health facility</b>	11.232	0.011			
• 11-20 Km	0.241	0.624	0.897	0.581	1.385
• 21-30 km	9.057	0.003	0.429	0.247	0.744
• > 30 km	2.729	0.099	0.528	0.247	1.127
<b>Home is built from</b>	7.858	<b>0.049</b>			
• Reeds & papyrus	2.025	0.155	4.952	0.547	44.864
• Mud	4.485	<b>0.034</b>	<b>1.673</b>	1.039	2.694
• Plates	1.622	0.203	2.936	0.560	15.408
<b>Number of windows per room</b>	6.253	<b>0.044</b>			
• No windows	4.657	<b>0.031</b>	<b>2.208</b>	1.075	4.532
• Only one window	0.701	0.402	0.899	0.702	1.153
<b>Family Size</b>	4.522	<b>0.033</b>	<b>1.031</b>	1.002	1.061
<b>Number of family members older than 15 year</b>	17.509	<b>&lt;0.001</b>	<b>1.093</b>	1.048	1.139
<b>Crowding Index</b>	1.021	0.312	0.958	0.882	1.041
<b>Drink non-sterile milk</b>	31.554	<b>&lt;0.001</b>	<b>3.866</b>	2.412	6.197
<b>Pollution at workplace</b>	10.899	<b>0.028</b>			
• Dust/Sands	3.926	<b>0.048</b>	<b>0.747</b>	0.560	0.997
• Smoke	1.575	0.210	1.474	0.804	2.700
• Exposure to animals	3.550	0.060	1.903	0.974	3.717
• Others	0.106	0.745	0.670	0.060	7.474
<b>Residence near (within 1-2 km) an oil facility (well/refinery) or brick factory</b>	0.075	0.785	1.081	0.619	1.886

Reference categories: rural for area of recent residence, urban for other than urban residence, distance up to 10 km for distance to nearest health facility, brick for "home is build from", more than one window for number of window per room, drink sterile milk for "drink non-sterile milk", none for pollution at workplace, not for residence near oil or brick production facility.

\*displaced or rural or marshland.

All variable were adjusted for both age and sex.



**Table 7: Continue.**

Variables	Wald Statistic	P value	OR	OR 95% CI	
				Lower	Upper
<b>Cooking fuel</b>	5.912	0.116			
• Kerosene	4.027	<b>0.045</b>	<b>2.538</b>	1.022	6.305
• Biomass fuel*	1.127	0.288	1.644	0.657	4.118
• Mixed	1.075	0.300	1.411	0.736	2.705
<b>No place allocated for cooking at home</b>	2.312	0.128	1.531	0.884	2.653
<b>Livestock Farming</b>	2.072	0.355			
• Inside home	1.037	0.308	1.205	0.841	1.727
• Outside home	1.398	0.237	1.278	0.851	1.920

Reference categories: natural gas for cooking fuel, Yes for place of cooking at home, none for livestock farming.

\*Solid organic fuel (animal excreta, wood, etc)

All variable were adjusted for both age and sex.

#### 4. Discussion:

TB cases distribution in this study characterized by the significant dominance of the younger age group (15-45 year) which is consistent with TB epidemiology in high growth population [12]. Compared to this young age group, risk for TB occurrence is more than double after the **age of 65** which is consistent with the vulnerability to develop active disease at such ages [12].

Generally speaking; TB patients have lower **BMI** compared to control this could be attributed to the fact tuberculosis patients are more likely to be poor and malnourished, and underweight increases the occurrence of TB by around 2.5 times compared to normal body weight. These findings are consistent with previous literatures that underweight is a risk factor for TB [4, 5, and 11]. BMI is strongly inversely associated with risk of progression to TB disease. Overweight and higher BMI protects from tuberculosis ( $OR < 1$ ) [11].

**Single** people are twice at risk to develop TB than others a finding shared by another study in Croatia [4].

**Education** level less than intermediate education increases the risk of TB around two times or more [11], other literature states that high education protects from TB [5].

Regarding occupation; **hard work/farming**, **student** status and **unemployment** are more prone to develop TB compared to other occupations [4, 11].

There was no significant association between monthly income and disease status in this study, anyhow, other literatures found a significant relation between tuberculosis and low income [4, and 11]

According to this study; tobacco smoking (cigarettes or Hubble-Bubble) and duration of smoking were not significant predictors of TB disease. A study in Northern India do not find this association is significant [10], while other studies found Tobacco smoking a risk factor for TB [4, 11].

**Family history of TB** was found as a predictor for TB. Contacts of TB cases are prone to infection and disease development [4].

BCG immunization has no significant association with TB occurrence [8].

This study found a protective effect for **allergic bronchitis** (asthma) from tuberculosis. Community control were found less frequent to have asthma than TB patients, this finding was encountered in a study included three countries in West Africa [13]. In addition, a putative link between exposure to mycobacteria and a decreased risk of atopic disease was suggested by a Japanese study [14].

Tumors or malignancies showed no significant association with TB disease despite the risk of low immune status brought by its treatment [4]. Tumors have low public importance due to low prevalence despite strong evidence for causal association [11].

Diabetes Mellitus increases the risk of developing TB according to some literatures [4, 6, and 11]. This study found a significant association of diabetes with TB but couldn't give a significant estimate that measures this relationship.

Investigators used the history of anemia as indirect indicator for malnutrition since malnutrition (under nutrition or protein energy malnutrition) has a causal association with TB [5, 11]. History of anemia showed no significant association with TB according to this study.

Taking into consideration that steroid therapy suppresses immunity and increase the risk for developing active TB [15, 16], systemic steroids therapy over long periods causes a significant increase in TB incidence [17] and this includes inhaled steroids [18], as well as all levels of glucocorticoids use were associated with extra TB risk even if patient had only one prescription in the last 6 months [19]; so investigators requested history of use of steroid and for Dexon (local traditional naming for Dexamethasone medications) in case interviewees do not recognize Dexon a steroidal therapy. Related findings in this study were not significant apart from increased risk with **longer use of Dexamethasone** medications.

This study found living in **non-urban residence** is a risk factor for TB but it did not recognize which of non-urban conditions (marshland, rural, internally displaced, etc) is more significant to increase TB occurrence than others.

Distance from nearest health facility showed no significant association with TB occurrence. Longer distance in this study describes the non-urbanity of the residence and living in remote or outreach areas.

Homes built from mud moderately increases the risk of TB occurrence (RR = 1.7) compared to homes built from bricks, while the relation between homes built from Reeds and papyrus or plates was not clear (not significant). Anyhow, home built from mud is an indirect indicator for poverty which is a risk factor for TB [4, 7].

Homes with no windows i.e. with improper ventilation with fresh air and poor sunlight illumination, is a significant predictor for TB [8]

Unlike a study [5] found no significant association between house hold size and TB; in this study "family size" including "number of family members older than 15" slightly significantly increased the risk of TB occurrence. While crowding was not a significant risk factor for TB in this study as well as in another study [5], crowding in other study is a risk factor for TB [4]. Crowding increases risk of TB transmission and there are no good data on strength of association with developing TB disease [11].

Those who drink non-sterile milk are four times likely to develop TB. Since none of included TB cases were intestinal; then the justification for this association probably are the non-urbanity, and living in outreach areas distant from basic community services.

Workplace environment polluted with dust or sands decrease the risk of TB occurrence in this study while workplace environments polluted with smoke, exposure to animals, or other pollutants which showed no significant risk for TB in this study. Literatures states that indoor air pollution (smoking [20], fuel combustion – solid biomass fuel [20] or kerosene [21]) and outdoor air pollution risks for lung tissue damage and increased susceptibility to develop TB disease [22].

Residence near a facility produces brick, or a facility participates in oil acquisition or production was not a significant risk factor for TB, though these facilities are expected to produce air pollutants. Ambient air pollution exposure is a risk for pulmonary TB. Particulate matter with an aerodynamic diameter of less than 2.5 may have the potential to impact lung pathology and increased susceptibility to develop

TB disease [22]. Other study [23] finds no significance for ambient air pollution on TB occurrence (outdoor air pollution plays no role).

Kerosene as a cooking fuel showed 2.5 times risk to develop TB compared to natural gas fuel. Another study stated that using kerosene stoves and wick lamps is associated with TB [21]. Biomass fuel was not a significant risk factor for TB in this study and was proved to increase risk of TB as indoor pollutant [10, 20].

Absence of a specified space for cooking (Kitchen) inside home was not a significant risk factor for TB in this study. Literatures stated non separate kitchen e.g. being a part of the bedroom or other room [5] induces indoor air pollution and increases the risk for TB [8]. Separated kitchen (specified room for cooking) decreases the risk for TB [24].

Livestock farming (whether inside or outside home) was not found a significant risk factor for TB in this study. It is too difficult to have an evidence links between TB infection and livestock if we assume TB infection in such people is zoonotic since no molecular epidemiological study has been conducted on enrolled TB patients. Livestock farming can be considered a source of indoor air pollution if this was inside home and then can link with TB [20].

Taking into consideration among the key causes, or at least correlates, of **poverty** and under the category of household and individual characteristics; among the most important are [25, 26]:

- Demographic: household size, age structure, dependency ratio, gender of head.
- Economic: employment status, hours worked, property owned.
- Social: health and nutritional status, education, shelter.

So, this study found some factors that are shared between TB and poverty, which are:

- 1- **Under weight**: it is an indicator of poor nutritional status.
- 2- **Low education level**.

Literacy and schooling are key determinants of poor people's ability to take advantage of income-earning opportunities [25].

### **3- Unemployment.**

The overall unemployment rate in Iraq is high [27].

- 4- **Living environment:** living in non-urban residence, homes built from mud and homes not provided with windows.

Living in such conditions questions the availability and the use of drinking water, communications services, electricity, and other energy sources, the level of sanitation, the degree of isolation (availability of roads and paths which are usable at all times, length of time and availability of transportation to get to work) and the degree of personal safety [25].

- 5- Large **family size:** A possible correlation between household size and level of poverty [25]. The poor tend to live in larger households [26].

This study illustrated the link between poverty and TB, a link which is already known for many years [27], and as a disease of poverty, Tuberculosis is responsible for the loss of many years of healthy life [28]; Effort cut this vicious cycle between poverty and TB are needed to alleviate both of them in a country where poverty level continues to remain high (23% of the population living under the national poverty line of US\$ 2.20 per day) [29].

## **5. Conclusions and Recommendations**

- 5.1.** Predictors for tuberculosis include: age older than 65, under weight, single status, low education level, hard work/farming, student status and unemployment, family history of TB, long duration of Dexamethasone use, non-urban residence (rural, marshland or displace people), homes built from mud, homes not provided with windows (i.e. not proper ventilation or sun-light illumination), large family size, drinking non-sterile milk, use of kerosene as s cooking fuel.
- 5.2.** Interventions focused on poverty are undoubtedly useful. Therefore, the fight against TB should be accompanied by the additional participation of any structures that tailor health policy and by the involvement of the entire community. A combination of broad public health activities aimed at interventions outside the health sector can bring us closer to TB control.
- 5.3.** Mass education about the diseases and its risk factors, healthy indoor environment and risk of prolonged used of Dexamethasone medications should be considered.

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### Annex (1)

استبانة الدراسة: "عوامل اختطار مرض التدنن في جنوب العراق مع التركيز على الأهوار"

رقم الاستمارة:

نوع المشارك:

(تدرن/مقارنة)

سنة ( )

### اولا- الخصائص السكانية

السؤال (١) ما هو عمرك بالسنوات؟

السؤال (٢) الطول ( ) سم

الوزن ( ) كغم

السؤال (٣) الجنس؟

١	ذكر
٢	أنثى

السؤال (٤) الحالة الاجتماعية

١	مطلق
٢	أرمل
٣	أعزب
٤	متزوج

السؤال (٥): ما هو أعلى مستوى تعليمي حصلت عليه؟

١	امي
٢	يقرا ويكتب
٣	التعليم الابتدائي
٤	التعليم الإعدادي
٥	شهادة جامعية فما فوق
٦	أخرى (الرجاء التحديد.....)

سؤال (٦): ما هو نوع العمل؟

١	موظف
٢	عامل/فلاح
٣	متقاعد
٤	تاجر
٥	طالب
٦	عاطل عن العمل
٧	ربة بيت
٨	عسكري
٩	اخرى (تذكر.....)

السؤال (٧) هل ان مجال عملك يعرضك للتلوث بواسطة :-

١	الرمال والأتربة
٢	الدخان
٣	مخالطة الحيوانات
٤	اخرى (تذكر.....)
٥	لا يوجد تعرض للتلوث

السؤال (٨): كم يبلغ مصروفك الشهري، بالدينار العراقي؟

١	أقل من ١٢٥٠,٠٠٠ د	
٢	بين ٢٥٠,٠٠٠ – ١٠٠٠,٠٠٠ د	
٣	أكثر من ١٠٠٠,٠٠٠ د	

السؤال (٩): ما هو مكان إقامتك الحالي؟

١	نازح من داخل المحافظة	
٢	نازح من محافظة أخرى	
٣	أهوار	
٤	ريف	
٥	حضر	

## ثانياً- الخصائص (العوامل) الصحية

السؤال (١٠): كم يبعد مكان سكنك عن أقرب عيادة صحية أو مستشفى؟

١	١٠-٠ كم	
٢	٢٠-١١ كم	
٣	٣٠-٢١ كم	
٤	أكثر من ٣٠ كم	

السؤال (١١): ١- هل تدخن السكائر

١	نعم	
٢	لا	

ب- إذا كنت تدخن السكائر ما هو عدد سنوات التدخين.....سنة

ج - ما عدد السكائر التي تدخنها يوميا .....سكارة

السؤال (١٢): ١- هل تدخن النرجيلة

١	نعم	
٢	لا	

ب - إذا كنت تدخن النرجيلة ، ما هو عدد سنوات التدخين .....سنة

السؤال (١٣): هل أصبت سابقاً بمرض السل؟

١	نعم	
٢	لا	

السؤال (١٤): هل أصيب أحد أفراد أسرتك بمرض السل؟

١	نعم	
٢	لا	

السؤال (١٥) هل تعاني من  
١ - حساسية القصبات الهوائية

١	نعم	
٢	لا	

إذا كانت الإجابة نعم منذ متى ؟ .....

ب - أمراض صدرية أخرى

١	نعم	
٢	لا	

ب - إذا كانت الإجابة نعم ، اذكر نوع الإصابة .....  
ج - كم عدد السنوات ..... سنة

ج - أورام

١	نعم	
٢	لا	

د - مرض السكر

١	نعم	
٢	لا	

منذ متى (.....) سنة

هـ - هل أخبرتك بانك مصاب بفقر الدم

١	نعم	
٢	لا	
٣	لا اعرف	

السؤال (١٦) ١ - هل تعاني من مرض مزمن يعالج بالكورتيزون

١	نعم	
٢	لا	
٣	لا اعرف	

ب - إذا كانت الإجابة (نعم) ما عدد سنوات استخدام العلاج (.....) سنة

السؤال (١٧): هل سبق وان استخدمت حب او شراب دواء يسمى د كسن ؟

١	نعم	
٢	لا	
٣	لا اعرف	

إذا كانت الإجابة نعم اذكر المدة ..... بالشهور

السؤال (١٨) أ - هل لقحت ب لقاح ال بي سي جي

١	نعم	
٢	لا	

ب - هل توجد ندبة للقاح الـبي سي جي على الكتف الايسر

١	نعم	
٢	لا	

### ثالثاً:- الخصائص (العوامل) البيئية

السؤال (١٩): هل تسكن بالقرب من معامل الطابوق او من حقول انتاج النفط (فى حدود ١-٢ كم) ؟

١	نعم	
٢	لا	

السؤال (٢٠) ان الوقود المستخدم في الطبخ هو:-

١	الغاز	
٢	النفط	
٣	الخشب وفضلات الحيوانات	
٤	مختلط	

السؤال (٢١): هل يوجد في البيت مكان مخصص للطبخ - مطبخ ؟

١	نعم	
٢	لا	

السؤال (٢٢) ا: - ما عدد افراد الاسرة الذين يسكنون في البيت نفسه ؟ ( )

ب - عدد الغرف .....

ج - عدد افراد الاسرة فوق سن ١٥ سنة .....

السؤال (٢٣) البيت الذي تسكنه مبني من :

١	القصب والبردي	
٣	الطين	
٣	الطابوق	
٤	الصفيح	

السؤال (٢٤): يبلغ عدد النوافذ (الشبابيك) في كل غرفة . ؟

١	لا توجد	
٢	١	
٣	٢ او اكثر	

السؤال (٢٥) هل تشرب الحليب بدون تعقيم (بدون الغلي على النار)؟

١	نعم	
٢	لا	

السؤال (٢٦) هل تقوم الاسرة

١	بتربية الحيوانات داخل البيت	
٢	بتربية الحيوانات خارج البيت	
٣	لا توجد تربية للحيوانات	

## Annex (2)

### Study Questionnaire Form the entitled study " Risk factors of TB in southern Iraq with specific focus on governorates with marshland populations"

ID:

Participant type: ( Case/Control)

Q1: Age ( )year

Q2: Height ( ) cm, Weight ( ) kg

Q3: Gender

1	Male	
2	Female	

Q4: Marital Status

1	Divorced/Separated	
2	Widow	
3	Single	
4	Married	

Q5: Education

1	Illiterate	
2	Read and write	
3	Primary school	
4	Preparatory school	
5	Higher than preparatory school	
6	Others (Specify _____)	

Q6: Occupation

1	Employee (governmental)	
2	Hard worker/farmer	
3	Retired	
4	Free work	
5	Student	
6	Unemployed	
7	Housewife	
8	Military	
9	Others (specify _____)	

Q7: Exposure to workplace pollutants

1	Dusts and sands	
2	Smoke	
3	Contact to animals	
4	Others (specify _____)	
5	No exposure to pollutants	

Q8: Monthly income of the family (in local Iraqi currency; ID)

1	< 250,000	
2	250,000- 1000,000	
3	> 1000,000	

Q9: Your recent area of residence is

1	Internally displaced –from the same governorate	
2	Internally displaced –from other governorate	
3	Marshland area	
4	Rural	
5	Urban	

**Q10: Distance between residence and nearest health facility**

1	Up to 10 Km	
2	11-20 Km	
3	21-30 Km	
4	> 30 Km	

**Q11-A: Do you **smoke** cigarettes?**

1	Yes	
2	No	

B: if yes, duration is \_\_\_\_\_ years

C: if yes, Numbe of daily smoked cigarettes is \_\_\_\_\_

**Q12-A: Do you **smoke** Argela?**

1	Yes	
2	No	

B: if yes, duration is \_\_\_\_\_ years

**Q13: Did you have **TB** before?**

1	Yes	
2	No	

**Q14: Did any of your **family** have **TB** before?**

1	Yes	
2	No	

**Q15: Do you suffer from:**

**A-Allergic bronchitis/Ashtma**

1	Yes	
2	No	
	If yes, for _____ years	

**B-other chest diseases**

1	Yes	
2	No	
	If yes; type of this chest disease is _____	
	If yes, before _____ years	

**C-Tumors**

1	Yes	
2	No	

**D-Diabetes Mellitus**

1	Yes	
2	No	
	If yes, for _____ years	

**E-Do you have **anemia****

1	Yes	
2	No	
3	Do not know	

**Q16-A: Do you suffer from a chronic diseases needs **steroid** treatment**

1	Yes	
2	No	
3	Do not know	

B-: if yes, for how long? \_\_\_\_\_ years



Q17-A: Have you used **Dexon** (Dexamethasone) medications?

1	Yes	
2	No	
3	Do not know	
	B-: if yes, for how long? _____ months	

Q18-A: Immunized with **BCG**?

1	Yes	
2	No	
	B: BCG scar is evident on left shoulder?	
1	Yes	
2	No	

Q19: Live within 1-2 Km **near to brick factory or oil facility**?

1	Yes	
2	No	

Q20: Your **cooking fuel** is

1	Natural gas	
2	Kerosen	
3	Wood/animal debri	
4	Mixed	

Q21 Is there a place at home allocated for cooking (**kitchen**)?

1	Yes	
2	No	

Q22-A: Number of **family members** sharing home with you \_\_\_\_\_

	B: Number of rooms _____	
	C: Number of family members older than 15 _____	

Q23: Your **home is built from**

1	Rruseeds and papy	
2	Clay	
3	Plates	
4	Bricks	

Q24: At residence, numbe of **windows** in each room is

1	Non	
2	One	
3	Two or more	

Q25: Do you drink **non-sterile milke** (non-boiled/non-pateurized milk)?

1	Yes	
2	No	

Q26: **Animal Husbandry**

1	Inside home as well	
2	Outside home	
3	No livestoke	

### Annex (3)

<i>Data collectors</i>	<i>Job title</i>	<i>Job address</i>	<i>Name in arabic</i>
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#### Basrah governorate

1-Dr Dhia Buchit	GTC	Basra TB Clinic	د ضياء بخيت
2- Dr Dhia Mahmood	Physician of GTC	Basra TB Clinic	د ضياء محمود
3-Dr Suad Hasson	DTC	Basra 1 <sup>st</sup> DTC	د سعاد محمود
4-Dr Star Farhan	DTC	Basra 2 <sup>nd</sup> DTC	د ستار فرحان
5-Dr Yasin Salih	DTC	Al-Qurna DTC	د ياسين صالح
6-Dr Abdulhusain Dawood	DTC	Al-Madaina DTC	د عبد الحسين داود
7-Dr Alia Abdulmunim	DTC	Al-Zubair DTC	د علياء عبد المنعم
8- Dr Khalid Ahmid	DTC	Shat al-Arab DTC	د خالد احمد
9-Dr Muhsin Ali	DTC	Al-Hartha DTC	د محسن علي
10- Dr Amal Abas	DTC	Abo al-Kasib DTC	د امل عباس

#### Thi-Qar governorate

11-Dr Hashim Ahmid	GTC	Thi-Qar TB Clinic	د هاشم احمد البطاط
12- Dr Isra Abduljabar	DTC	Nasyria 1 <sup>st</sup> DTC	د اسراء عبد الجبار
13- Dr Hussain Riad	DTC	Nasyria 2 <sup>nd</sup> DTC	د حسين رياض
14- Dr Ahmid Yunis	DTC	Sookashiok DTC	د احمد يونس
15- Dr.Qais Jasim	DTC	Al-chibaesh DTC	د قيس جاسم
16- Dr Muhamid Ali	DTC	Al-Shatra DTC	د محمد علي
17- Dr Bashar Sharhan		Al-Rifae DTC	د بشار شرهان

#### Missan governorate

18- Dr Zuhair Abdulkarim	Physician of GTC	Missan TB Clinic	د زهير عبد الكريم
19- Dr Salah Jasim	DTC	Al-Emara DTC	د صلاح جاسم
20-Dr Lamia Dawood	DTC	Al-Majar DTC	د لمياء داود
21- Dr Ahmid Hassan	DTC	Qalat-Salih DTC	د احمد حسن
22-Dr Baha Abdulhusain	DTC	Ali –Gharbi DTC	د بهاء حسين

**Annex (4)**

National Tuberculosis Control Program / IRAQ

WHO 2011 – 2012 Grant for Operational Research

**Sub-Activity Technical Report**

Study Project Title:-

**Risk factors of Tuberculosis in The Southern Governorates(Basra ,Thi-qar and Missan) with particular focus on Marshlands / Iraq /2012.**

**Principal Investigator:- Dr.Abdulkarim Fazza Abdulla**

**Type of sub-activity:- Training Session**

**Title: - Training session for Study Data Collectors.**

**Date: - December 16<sup>th</sup> - 17<sup>th</sup> 2012.**

**Venue:- Respiratory and Chest Clinic in Missan.**

**Agenda:-**

Day &Time	Agenda	Facilitator
<b>Day 1</b>		
9:30-9:45	Greeting	Dr Abdulkarim
9:45-10:15	Objectives of the training session	Dr Abdulkarim
10:15-10:30	Coffee break	
10:30-11:30	Priorities of Operational Research in Tuberculosis	Dr Muhsin
11:30-12:00	Discussion	
12:00-1:00	Risk Factors of TB	Dr Abdulkarim
1:00- 1:30	Reviewing the Questionnaire form	Dr Muhsin & Dr Abdulkarim
<b>Day 2</b>		
9:00-10:00	Discussion	
10:00-10:15	Coffee break	
10:15-1:15	Work group	
1:15-2:00	Discussion	

**Aim of this training session:**

**Prepare study personnel for the study implementation.**

**Objectives:**

- 1- Obtain a panoramic view about the study; its objectives, methodology, tools and implementation.**
- 2- Train and discuss study tool and pretesting for a final version.**

**Facilitators:**

**1-Dr Muhsin Jaralla (TB Coordinator of Iraqi Southern Gov.)**

**2-Dr Abdulkarim Fazza (Manager of Missan TB Clinic)**

## **Participants:**

### **Description of the Session:**

The 2 days training course is for training the study staff primarily to become familiar with collection of the data from both cases and controls who subject to inclusion and exclusion criteria.

The aim of this course is mostly concentrated on reviewing the structured questionnaire which was developed for this study.

#### **Day 1**

Introduction to the study and its purposes followed by illustration the priorities of the operational research as one component of the stop TB strategies.

Details about different factors which are associated with TB are discussed.

At the end of the first day questionnaire forms are distributed to each participant for reviewing , clarify confusing items , comment on apparent validity of each items.

#### **Day 2**

Open discussion was continuous , after that the participants are divided into three groups , interviewing done between participants ,and with the patients attending the TB Clinic ,each interview last approximately 10 minutes and the structured questionnaire remained as it.

## **Participants:**

- 1-Dr Dhia Buchit -Basra GTC
- 2- Dr Dhia Mahmood- Basra TB Clinic doctor
- 3-Dr Suad Hasson- Basra 1<sup>ST</sup> DTC
- 4-Dr Ali Mutlaq- Basra 2<sup>nd</sup> DTC.
- 5-Dr Iman Shanbar- Qurna DTC.
- 6-Dr Abdelhusain Dawood – Al-medaina DTC.
- 7-Dr Alia Abdelmunim – Al-Zubair DTC.
- 8- Dr Nasir Abdulaziz- Shat al-Arab DTC.
- 9-Dr Muhsin Ali – Al-hartha DTC.
- 10- Dr Sadiq Jawad – Aboalkasib DTC.
- 11-Dr Hashim Ahmid – Dhiqar DTC.
- 12- Dr Isra Abdeljabar Nasyria 1<sup>st</sup> DTC.
- 13- Dr Abas Awad .Nasyria 2<sup>nd</sup> DTC.
- 14- Dr Ahmid Yunis – Soq elshough DTC.
- 15- Dr.Qasim Jasim Alchibaish DTC.
- 16- Dr Muhamid Ali –Alshatra DTC.
- 17- Dr Bashar Sharhan –Alrifai DTC.
- 18- Dr Zuhair Abdulkarim –Missan TB Clinic doctor.
- 19- Dr Salah Jasim – Al-emara DTC.
- 20-Dr Lamia Dawood –Almajar DTC.
- 21- Dr Ahmid Hassan –Qalat-Salih DTC.
- 22- Dr Baha Abdelhusain – Ali-Gharbi DTC




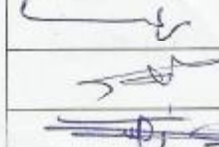




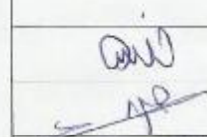
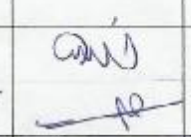






**National Tuberculosis Control Program  
National Meeting Activity**



Governorate:MISSAN		Date: Dec 16 <sup>th</sup> -17 <sup>th</sup> -2012		
Activity title: training session on cross sectional study about risk factors of TB in Southeren governorate with marshlands			Activity code:	
Attendant List				
1 <sup>st</sup> Day	2 <sup>nd</sup> Day	Job Address	Name	No.
		Basra GTC	Dr. Dhia Buchit	1
		Basra 1 <sup>st</sup> district	Dr. Suad Hasson	2
		Basra 2 <sup>nd</sup> district	Dr. Ail Mutleg	3
		Qurna district	Dr. Iman Shantbar	4
		Al-medena district	Dr. Abdelhusin Dawood	5
		Shat Al-Arab district	Dr. Nasir Abdulaziz	6
		Al- Zubair district	Dr. Aila Abdulmunim	7
		Al-Hartha district	Dr. Muhsin Ail	8
		Aboalkhasib district	Dr. Sadiq Jawad	9
		Dhi Qar GTC	Dr. Hashim Ahmid	10
		Nasyria 1 <sup>st</sup> district	Dr. Isra Abdejabar	11
		Nasyria 2 <sup>nd</sup> district	Dr. Abas Awad	12
		Suq elshouogh district	Dr. Ahmid Yonis	13
		Althibaish district	Dr. Kasim Jasim	14
		Alshatra district	Dr. Muhamid Ali	15
		Alrifai district	Dr. Bashar Sharhan	16
		Missan TB clinic Doctor	Dr. Zuhair Abdulkarim	17
		Ammara district	Dr. Salah Jasim	18
		Majer district	Dr. Lamia Dawood	19

		Qalat- Salih district	Dr. Ahmid Hassan	20
		Ali-Ghargi district	Dr . Baha Abdelhussien	21
		Participant	Dr. Diyahmehmed	22
				23
				24
				25
				26
				27
				28
				29
		FACILITATOR	Dr. Abdulkarim Fezza	30
		FACILITATOR	Dr. Muhsin Jaralla	31
		SECRETARIAL	Mohammed Gulw	32
		SECRETARIAL		

Approved by DTC

Dr. Abdul Karim Fezza

Approved by DCH

Approved by NTP Manager

# Participants list


Name	Jop Title	Jop Adress (in the study)	Mobile #	Email
Dr. Abdulkarim Fazza	Missan GTC	Principle Investigator	+9647700604523	missantb@yahoo
Dr.Muhsin Jaralla		Co-investigator	+9647700604759	muhsinjaralla@yahoo
Dr.Dhia Buchit	Basra GTC	Data Collector	+9647700604755	Hhom6yah66@yahoo
Dr.Suad Hasson	Basra 1 <sup>st</sup> district	Data Collector(Basra Gov.)	+9647703116878	Dr.ssss2008@yahoo
Dr.Ali Mutleg	Basra 2 <sup>nd</sup> District	Data Collector(Basra Gov.)		
Dr. Iman Shanbar	Qurna Distric	Data Collector(Basra Gov.)	+9647801320212	Eman alsacal@yahoo
Dr.Abdelhusin Dawood	Al-medena District	Data Collector(Basra Gov.)	+9647700604758	Medina_hd@yahoo
Dr.Nasir Abdulaziz	Shat Al-Arab District	Data Collector(Basra Gov.)	+9647712432211	nasseralaziz@yahoo
Dr.Alia Abdulmunim	Al-Zubair District	Data Collector(Basra Gov.)	+9647801058158	Zubartb@yahoo
Dr.Muhsin Ali	Al-Hartha District	Data Collector(Basra Gov.)	+9647700604760	Mahsendr66@yahoo
Dr.Sadiq Jawad	Aboalkhasib District	Data Collector(Basra Gov.)	+9647802418349	Ab.kan.@yahoo
Dr.Hashim Ahmid	Dhi Qar GTC	Data Collector	+9647801573531	Nsriya@yahoo
Dr.Isra Abdejabar	Nasyria 1 <sup>st</sup> District	Data Collector(DhiQar Gov.)	+9647801055283	Nsriya@yahoo
Dr.Abas Awad	Nasyria 2 <sup>nd</sup> District	DataCollector (DhiQar Gov.)	+9647812009209	Nsriya@yahoo
Dr.Ahmid Yonis	Soq elshouogh District	Data Collector(DhiQar Gov.)	+9647813816406	Nsriya@yahoo
Dr.Kasim Jasim	Altchibaish District	Data Collector(DhiQar Gov.)	+9647803009562	Nsriya@yahoo
Dr.Muhamid Ali	Alshatra District	Data Collector (DhiQar Gov.)	+964780819449	Nsriya@yahoo
Dr. Bashar Sharhan	Alrifai District	Data Collector(Dhi QarGov.)	+964781503868	Nsriya@yahoo
Dr.Zuhair Abdulkarim	Misan TB Clinic Doctor	Data Collector	+9647707017905	Dr.zuhair974@yahoo
Dr.Salah Jasim	Ammara District	Data Collector(Missan Gov.)	+9647700604524	Sahjsm@yahoo
Dr.Lamia Dawood	Majer District	Data Collector(Missan Gov.)	+9647705629642	
Dr.Ahmid Hassan	Qalat-Salih District	Data Collector(Missan Gov.)	+9647705032849	Ahmedaladawody71
Dr.Baha Abdelhussien	Ali-Ghargi District	Data Collector(Missan Gov.)	+9647803974515	

Dr Abdulkarim Fazza Abdulla

MissanTB Coordinator



## Annex (5)

	<p>جمهورية العراق وزارة الصحة مركز تدريب وتطوير الملاكات شعبة البحوث والوسائل التعليمية</p>
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### ١ - استمارة الموافقة المبدئية لمشروع بحث

يمكن الحصول على النموذج من موقع وزارة الصحة الالكتروني [www.moh.gov.iq](http://www.moh.gov.iq)



وزارة الصحة  
مركز تدريب وتطوير الملاكات  
شعبة البحوث

# 2011

#

١. رقم المشروع (يملاً من قبل شعبة البحوث)

٢. أسم مشروع البحث (باللغة العربية / الانكليزية)

--- عوامل اختطار مرض التدنر في محافظات جنوب العراق (البصرة، الناصرية وميسان خاصة في منطقة الاهوار

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٣. أسم الباحث الرئيس: العمر: ٤٨ الجنس ذكر الدرجة العلمية بكوريوس  
 د.عبد الكريم فزاع عبد الله  
 عنوان الباحث الرئيسي: الهاتف: ٠٧٧٠٠٦٠٤٥٢٣ البريد الالكتروني: mi s  
 دائرة صحة ميسان /العيادة الاستشارية للأمراض الصدرية  
 ٤. أسم المشرف العلمي إن وجد :

٥. الباحثون المشاركون

I-د ليث الصالحي

ii-د محسن جارالله

iii

iv

v

٦. أ- موقع مشروع البحث للباحث : الوزارة الصحة المؤسسة الدائرة:دائرة صحة ميسان  
 القسم:الصحة العامة الشعبة:العيادة الاستشارية للأمراض الصدرية والتنفسية  
 الموقع الميداني العيادة الاستشارية للأمراض الصدرية والتنفسية ووحدات التدنر في محافظات البصرة ، الناصرية وميسان  
 / ب - كتاب تأييد من دائرة الباحث العدد ١٩٣٤١ في ٣ ١٢ / ٢٠١٢

٧. مجال مشروع البحث :

أ- علوم طبية إحيائية (Biomedical sciences) فرع البحث الدقيق + (

ب- علوم سكانية (Population sciences) فرع البحث الدقيق (

ج- علوم السياسات الصحية ( ) He a السياسات الصحية، الأنظمة الصحية، التحليل

( الاقتصادي فرع البحث الدقيق



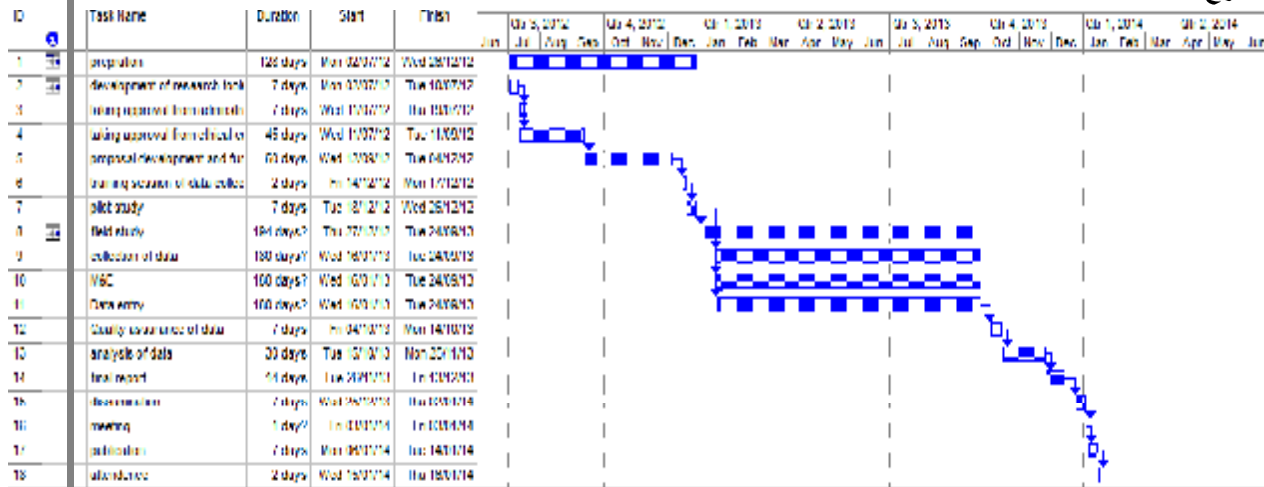
د- أخرى تذكر

٨. الجهة الممولة للمشروع: الصندوق العالمي / منظمة الصحة العالمية تفاصيل الدعم: منحة الصندوق العالمي / الدورة التاسعة نوع الدعم: مالي

٩. مدة المشروع / ٦ أشهر / من ١ ٥ ٢٠١٣ إلى ١ ١٠ ٢٠١٣

الجدول الزمني لإنجاز

المشروع



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١١.

١٢. نوع المشروع بحث أولي +

بحث ثانوي

وأخرى تذكر

Exp

١٣. هدف أهداف البحث

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١٤. عناوين أهم البحوث العراقية والأجنبية التي تناولت مجال وأهداف البحث منذ خمس سنوات ولحد الآن:

Reference:

- Slum health: Diseases of neglected populations  
Lee W Riley<sup>1\*</sup>, Albert I Ko<sup>2,3</sup>, Alon Unger<sup>4</sup> and Mitermayer G Reis<sup>3</sup>  
<http://www.biomedcentral.com/1472-698X/7/2>

2. **Social determinants put women at risk of tuberculosis (TB)**  
Continue reading at NowPublic.com: **Social determinants put women at risk of tuberculosis (TB) | NowPublic News Coverage** <http://www.nowpublic.com/health/social-determinants-put-women-risk-tuberculosis-tb#ixzz1yhYJZAt2>
3. Risk factors and social determinants of TB:  
[http://www.bc.lung.ca/association\\_and\\_services/documents/KnutUnionNARTBriskfactorsanddeterminantsFeb2011.pdf](http://www.bc.lung.ca/association_and_services/documents/KnutUnionNARTBriskfactorsanddeterminantsFeb2011.pdf)
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**5- Risk factors for pulmonary tuberculosis in Russia: case-control study**  
<http://www.bmj.com/content/332/7533/85>

The aims of this study are to evaluate the role of demographic , socio-economic and health-related factors , such as non-communicable diseases, in patients with TB.

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: ١٦. طرق البحث

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أ- تصميم البحث

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ب- حجم العينة

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# نظام الموافقة على مشروع بحث

## Proposal Format for research project protocol

أ- حجم العينة 872

Cases=436

Controles=436

ب- الطرق الإحصائية لتحليل البيانات using RDS analysis Tool V 5-6

١٥ موافقة اللجنة الأخلاقية المبدئية: تؤيد أن مشروع البحث نال الموافقة المبدئية من اللجنة

عضو	عضو	عضو
د. صباح أنصاري	د. صباح أنصاري	د. صباح أنصاري
الاسم	الاسم	الاسم
المهنة	المهنة	المهنة

عضو	رئيس اللجنة
الاسم	الاسم
المهنة	المهنة

اسم الباحث الثلاثي  
د. محسن جارا الله القرطوسي

مصادقة  
مدير دائرة الباحث  
التاريخ


دائرة صحة ميسان  
مكتب المتبصر الحماة

التوقيع  
اسم الباحث الثلاثي  
د. عبد الكريم فزاع عبدالله

مصادقة المشرف العلمي  
د. ثامر كاظم يوسف الحلبي



## Annex (6)

	<p>جمهورية العراق وزارة الصحة مركز تدريب وتطوير الملاكات شعبة البحوث والوسائل التعليمية</p>
---	---

### ١ - استمارة الموافقة المبدئية لمشروع بحث

يمكن الحصول على النموذج من موقع وزارة الصحة الالكتروني [www.moh.gov.iq](http://www.moh.gov.iq)



وزارة الصحة  
مركز تدريب وتطوير الملاكات  
شعبة البحوث

# 2011

#

١. رقم المشروع (يملاً من قبل شعبة البحوث)

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--- عوامل اختطار مرض التدنر في محافظات جنوب العراق (البصرة، الناصرية وميسان خاصة في منطقة الاهوار

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٣. أسم الباحث الرئيس: العمر: ٤٨ الجنس ذكر الدرجة العلمية بكوريوس  
 د.عبد الكريم فزاع عبد الله  
 عنوان الباحث الرئيسي: الهاتف: ٠٧٧٠٠٦٠٤٥٢٣ البريد الالكتروني: mi s  
 دائرة صحة ميسان /العيادة الاستشارية للأمراض الصدرية  
 ٤. أسم المشرف العلمي إن وجد :

٥. الباحثون المشاركون

I-د ليث الصالحي  
 ii-د محسن جارالله  
 iii  
 iv  
 v

٦. أ- موقع مشروع البحث للباحث : الوزارة الصحة المؤسسة  
 القسم:الصحة العامة الشعبة:العيادة الاستشارية للأمراض الصدرية والتنفسية  
 الموقع الميداني العيادة الاستشارية للأمراض الصدرية والتنفسية ووحدات التدرب في محافظات البصرة ، الناصرية وميسان  
 ب - كتاب تأييد من دائرة الباحث العدد ١٩٣٤١ في ٣ ١٢ / ٢٠١٢

٧. مجال مشروع البحث :  
 أ- علوم طبية إحيائية (Biomedical sciences) فرع البحث الدقيق +  
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 ج- علوم السياسات الصحية ( ) He a السياسات الصحية، الأنظمة الصحية، التحليل  
 الاقتصادي فرع البحث الدقيق ( )

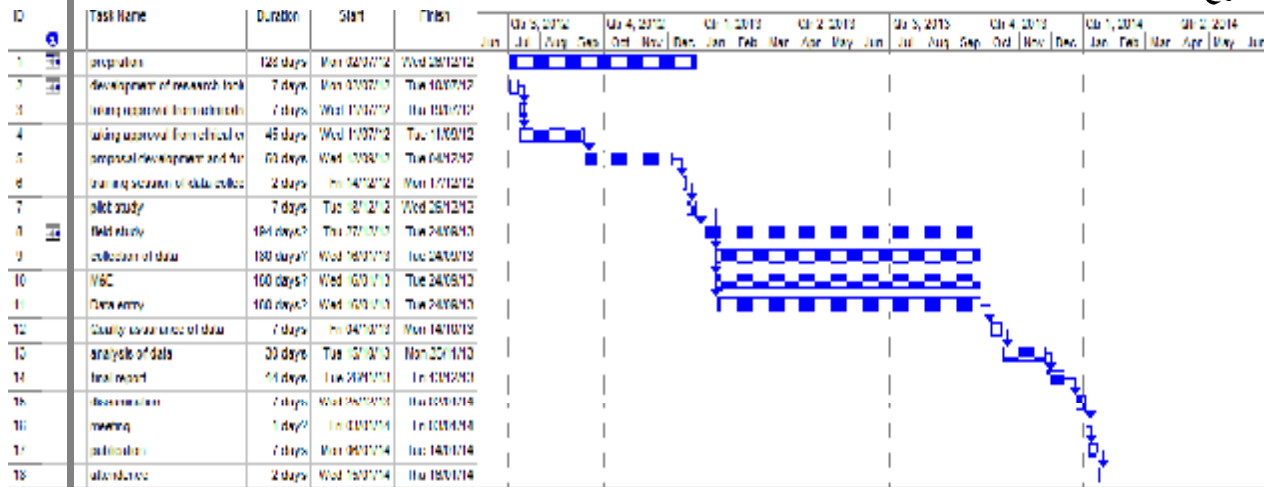
د- أخرى تذكر

٨. الجهة الممولة للمشروع: الصندوق العالمي / منظمة الصحة العالمية تفاصيل الدعم: منحة الصندوق العالمي / الدورة التاسعة نوع الدعم: مالي

٩. مدة المشروع / ٦ أشهر / من ١ ٥ ٢٠١٣ إلى ١ ١٠ ٢٠١٣

الجدول الزمني لإنجاز

المشروع



١٠.

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١٢. نوع المشروع بحث أولي +

بحث ثانوي

وأخرى تذكر

Exp

١٣. هدف أهداف البحث

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١٤. عناوين أهم البحوث العراقية والأجنبية التي تناولت مجال وأهداف البحث منذ خمس سنوات ولحد الآن:

Reference:

- Slum health: Diseases of neglected populations  
Lee W Riley<sup>1\*</sup>, Albert I Ko<sup>2,3</sup>, Alon Unger<sup>4</sup> and Mitermayer G Reis<sup>3</sup>  
<http://www.biomedcentral.com/1472-698X/7/2>

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[http://www.bc.lung.ca/association\\_and\\_services/documents/KnutUnionNARTBriskfactorsanddeterminantsFeb2011.pdf](http://www.bc.lung.ca/association_and_services/documents/KnutUnionNARTBriskfactorsanddeterminantsFeb2011.pdf)
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**5- Risk factors for pulmonary tuberculosis in Russia: case-control study**  
<http://www.bmj.com/content/332/7533/85>

الأسباب المنطقية لإجراء البحث : The aims of this study are to evaluate the role of demographic , socio-economic and health-related factors , such as non-communicable diseases, in patients with TB.

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١٦. طرق البحث :

أ- تصميم البحث a

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ب- حجم العينة ( 4 3

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# نظام الموافقة على مشروع بحث

## Proposal Format for research project protocol

أ- حجم العينة ٨٧٢

Cases=٤٣٦

Controles=٤٣٦

ب- الطرق الإحصائية لتحليل البيانات ٥-٦ V using RDS analysis Tool

١٥. موافقة اللجنة الأخلاقية المبدئية: تؤيد أن مشروع البحث نال الموافقة المبدئية من اللجنة

عضو	عضو	عضو
الاسم	الاسم	الاسم
المهنة	المهنة	المهنة

رئيس اللجنة
الاسم
المهنة

عضو
الاسم
المهنة

الاسم
المهنة


التوقيع
الاسم
المهنة

مصادقة مدير دائرة الباحث
التاريخ

مصادقة المشرف العلمي
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دائرة صحة ميسان  
مكتب المدير العام

## Annex (7)

	<p>جمهورية العراق وزارة الصحة مركز تدريب وتطوير الملاكات شعبة البحوث والوسائل التعليمية</p>
---	---

### ١ - استمارة الموافقة المبدئية لمشروع بحث

يمكن الحصول على النموذج من موقع وزارة الصحة الالكتروني [www.moh.gov.iq](http://www.moh.gov.iq)



وزارة الصحة  
مركز تدريب وتطوير الملاكات  
شعبة البحوث

# 2011

#

١. رقم المشروع (يملاً من قبل شعبة البحوث)

٢. أسم مشروع البحث (باللغة العربية / الانكليزية)

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٣. أسم الباحث الرئيس: العمر: ٤٨ الجنس ذكر الدرجة العلمية بكوريوس  
 د.عبد الكريم فزاع عبد الله  
 عنوان الباحث الرئيسي: الهاتف: ٠٧٧٠٠٦٠٤٥٢٣ البريد الالكتروني: mi s  
 دائرة صحة ميسان /العيادة الاستشارية للأمراض الصدرية  
 ٤. أسم المشرف العلمي إن وجد :

٥. الباحثون المشاركون

I-د ليث الصالحي

ii-د-محسن جارالله

iii

iv

v

٦. أ- موقع مشروع البحث للباحث : الوزارة الصحة المؤسسة الدائرة:دائرة صحة ميسان  
 القسم:الصحة العامة الشعبة:العيادة الاستشارية للأمراض الصدرية والتنفسية  
 الموقع الميداني العيادة الاستشارية للأمراض الصدرية والتنفسية ووحدات التدرب في محافظات البصرة ، الناصرية وميسان  
 / ب - كتاب تأييد من دائرة الباحث العدد ١٩٣٤١ في ٣ ١٢ / ٢٠١٢

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(الاقتصادي فرع البحث الدقيق

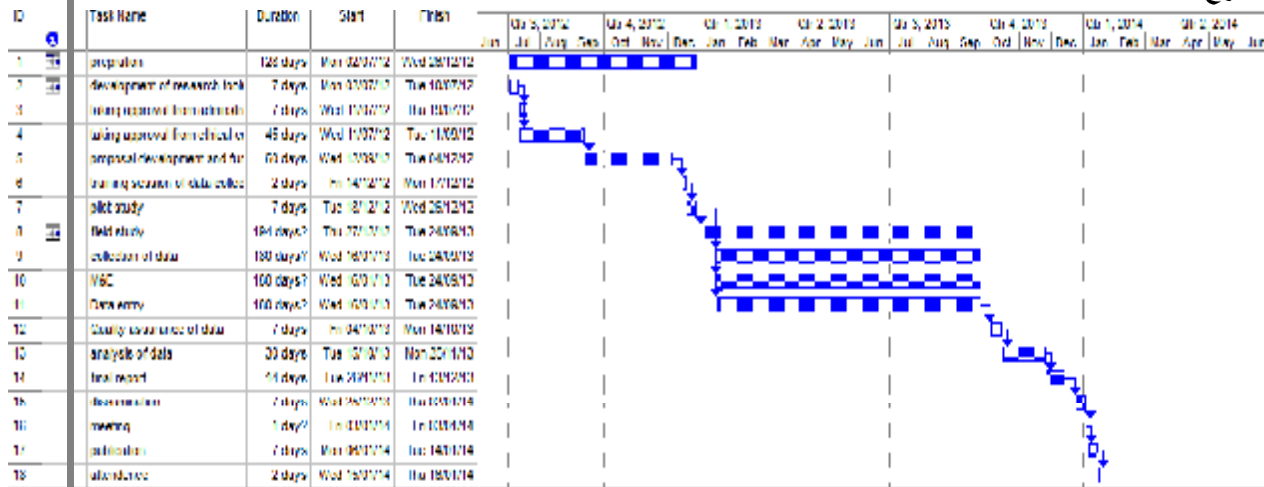
د- أخرى تذكر

٨. الجهة الممولة للمشروع: الصندوق العالمي / منظمة الصحة العالمية تفاصيل الدعم: منحة الصندوق العالمي / الدورة التاسعة نوع الدعم: مالي

٩. مدة المشروع / ٦ أشهر / من ١ ٥ ٢٠١٣ إلى ١ ١٠ ٢٠١٣

الجدول الزمني لإنجاز

المشروع



١٠.

١١.

١٢. نوع المشروع بحث أولي + ( بحث ثانوي

( وأخرى تذكر

Exp

١٣. هدف أهداف البحث

/ 1 o 1

١٤. عناوين أهم البحوث العراقية والأجنبية التي تناولت مجال وأهداف البحث منذ خمس سنوات ولحد الآن:

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**5- Risk factors for pulmonary tuberculosis in Russia: case-control study**  
<http://www.bmj.com/content/332/7533/85>

الأسباب المنطقية لإجراء البحث : The aims of this study are to evaluate the role of demographic , socio-economic and health-related factors , such as non-communicable diseases, in patients with TB.

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١٦. طرق البحث :

أ- تصميم البحث a

c

ب- حجم العينة ( 4 3

8 7 2

# نظام الموافقة على مشروع بحث Proposal Format for research project protocol

أ- حجم العينة 872

Cases=436

Controles=436

ب- الطرق الإحصائية لتحليل البيانات using RDS analysis Tool V 5-6



١٥. موافقة اللجنة الأخلاقية الميدانية: تؤيد أن مشروع البحث تال الموافقة عليها من اللجنة

عضو

الاسم

المهنة

عضو  
الاسم  
المهنة

عضو

الاسم

المهنة

عضو  
الاسم  
المهنة

رئيس اللجنة

الاسم

المهنة

عضو

الاسم

المهنة

التوقيع  
اسم الباحث الداعي

د. محسن جبار الله القروسي

مصادقة

مدير دائرة البحث

التاريخ

التوقيع

اسم الباحث الداعي

د. عبد الكريم فراج عبدالله

مصادقة المشرف العلمي

د. ناهي كاظم يوسف الخنثي

مصادقة  
مكتب المدير العام

## Annex (8)

### الموافقة المستنيرة لأفراد المجتمع والمرضى

١. عنوان الدراسة: عوامل الاختطار لمرض التدرن (السل) في جنوب العراق خاصة في منطقة الاهوار
٢. الغرض من الدراسة: البحث في عوامل اختطار مرض السل من أجل الحصول على المعلومات لتعزيز عملية الكشف المبكر للمرض وتقديم خدمات البرنامج الوطني لمكافحة السل بشكل صديق وسهل ويمكن ومجاني للمريض.
٣. الإجراء: نود التعرف على عوامل الاختطار المتعلقة بمرض السل عن طريق الاستبيان لغرض الوصول الى المجاميع التي تكون اكثر عرضة من غيرها للاصابة بمرض التدرن مما يساهم في الكشف المبكر وبدء المعالجة لمنع انتشار المرض.
٤. المخاطر/المتاعب: لا توجد مخاطر ناتجة عن مشاركتك في هذه الدراسة حتى وإن قررت عدم الإجابة عن أي سؤال أو قررت إيقاف المقابلة في أي وقت.
٥. الفوائد: لا توجد فوائد شخصية لك من المشاركة في الدراسة. ومن المتوقع وجود منافع مجتمعية عن الدراسة حيث ستعمل السلطات الصحية على الاستفادة من معلومات الدارسة لتحسين الخدمات الصحية المقدمة لمرضى السل والمجتمع.
٦. حقوق المشاركين: تعد مشاركتك طوعية وقد تختار إيقاف المقابلة في أي وقت ودون شروط. ومن حقك الاستفسار عن أية نقاط غير مفهومة
٧. السرية: لن يتم التصريح عن إجاباتك لأي شخص وستبقى مجهولة الهوية. ولن تتم كتابة اسمك على الاستبيان أو الاحتفاظ بها في أي سجلات أخرى. وسيتم إتلاف البيانات في حال الانسحاب من المقابلة. ويمكن الوصول إلى المعلومات فقط من قبل أعضاء فريق البحث ولأغراض البحث فقط.

للاستفسار الاتصال على الموبايل ٠٧٧٠٠٦٠٤٥٢٣

### نموذج الموافقة

#### موافقة المشارك

أعلن أنه قد تم تزويدي بالمعلومات أعلاه وتم شرحها لي وكان لدي كامل الفرصة في طرح الأسئلة وحصلت على إجابات كافية حول كافة الأسئلة التي طرحتها. وأعلن عن مشاركتي الطوعية في هذه الدراسة وأنا على معرفة بحقي الكامل في الانسحاب من الدراسة دون أي شروط.

اسم المشارك:-----

توقيع المشارك:-----

في حال عدم قدرة المشارك على قراءة النموذج وحاجته لشخص لشرح/ترجمة النموذج.

اسم الشخص الذي قام بشرح/ترجمة النموذج:-----

عنوان الشخص الذي قام بشرح/ترجمة النموذج:-----

توقيع الشخص الذي قام بشرح/ترجمة النموذج:-----

توقيع القائم بالمقابلة:-----

## **Annex (9)**

### **Informed consent form- TB patients and community members (control group)**

1. Study title: Risk factors for tuberculosis in southern governorates with specific focus on marshland areas.
2. Aim of the study: to study factors associated with or predict TB to enhance early TB case detection and provide national TB program services in friendly, easily, feasible and free for TB patients.
3. Procedures: Information about risk factors of TB are questioned through interviews of risk groups, so as to contribute to early detection and early treatment of TB and prevent its spread.
4. Hazards: No specific hazards/risks will yield from your participation in this study even if you decided not to respond to any question or to cancel or stop the interview.
5. Benefits: no special benefits at personal level, but at community level; health services will utilize study data to improve provided health services for TB patients and for the community.
6. Participant's rights: Your participation is completely voluntary and you may finalize the interview in any time as you want, and you have the right to request interviewers to explain any non-clear statements or questions.
7. Confidentiality: your responses will be kept confidential and anonymous. Your data will be discarded if you withdraw from the interview. Information accessed only by study personnel.

If you have any question, please call mobile on 07700604523

#### **Consent Form**

##### **Participant's Consent**

I have been well informed about this study and had the opportunity to ask and have suitable clarifications and I document my voluntary participation in this study while I am knowledgeable of my right to completely withdraw without a condition from this study.

Participant Name:

Participant Signature:

If the participant cannot read this form and needed for another person to explain and interpret it:


Name of person interpreted this form:

Address of person interpreted this form:

Signature of person interpreted this form:

Signature of interviewer:

## Annex (6)

	<p>جمهورية العراق وزارة الصحة مركز تدريب وتطوير الملاكات شعبة البحوث والوسائل التعليمية</p>
---	---

### ١ - استمارة الموافقة المبدئية لمشروع بحث

يمكن الحصول على النموذج من موقع وزارة الصحة الالكتروني [www.moh.gov.iq](http://www.moh.gov.iq)



وزارة الصحة  
مركز تدريب وتطوير الملاكات  
شعبة البحوث

# 2011

#

١. رقم المشروع (يملاً من قبل شعبة البحوث)

٢. أسم مشروع البحث (باللغة العربية / الانكليزية)

--- عوامل اختطار مرض التدرن في محافظات جنوب العراق (البصرة، الناصرية وميسان خاصة في منطقة الاهوار

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٣. أسم الباحث الرئيس: العمر: ٤٨ الجنس ذكر الدرجة العلمية بكوريوس  
 د.عبد الكريم فزاع عبد الله  
 عنوان الباحث الرئيسي: الهاتف: ٠٧٧٠٠٦٠٤٥٢٣ البريد الالكتروني: mi s  
 دائرة صحة ميسان /العيادة الاستشارية للأمراض الصدرية  
 ٤. أسم المشرف العلمي إن وجد :

٥. الباحثون المشاركون

I-د ليث الصالحي

ii-د-محسن جارالله

iii

iv

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٦. أ- موقع مشروع البحث للباحث : الوزارة الصحة المؤسسة  
 القسم:الصحة العامة الشعبة:العيادة الاستشارية للأمراض الصدرية والتنفسية  
 الموقع الميداني العيادة الاستشارية للأمراض الصدرية والتنفسية ووحدات التدنر في محافظات البصرة ، الناصرية وميسان  
 / ب - كتاب تأييد من دائرة الباحث العدد ١٩٣٤١ في ٣ ١٢ / ٢٠١٢

٧. مجال مشروع البحث :

أ- علوم طبية إحيائية (Biomedical sciences) فرع البحث الدقيق + (

ب- علوم سكانية (Population sciences) فرع البحث الدقيق (

ج- علوم السياسات الصحية ( ) He a السياسات الصحية، الأنظمة الصحية، التحليل

(الاقتصادي فرع البحث الدقيق

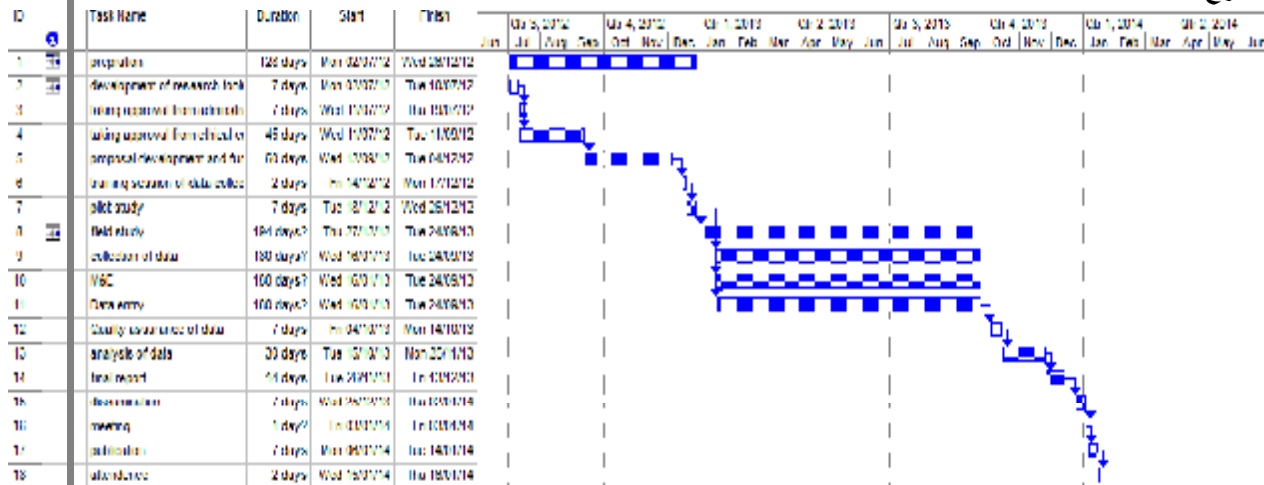
د- أخرى تذكر

٨. الجهة الممولة للمشروع: الصندوق العالمي / منظمة الصحة العالمية تفاصيل الدعم: منحة الصندوق العالمي / الدورة التاسعة نوع الدعم: مالي

٩. مدة المشروع / ٦ أشهر / من ١ ٥ ٢٠١٣ إلى ١ ١٠ ٢٠١٣

الجدول الزمني لإنجاز

المشروع



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١٢. نوع المشروع بحث أولي + ( بحث ثانوي

( وأخرى تذكر

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١٣. هدف أهداف البحث

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١٤. عناوين أهم البحوث العراقية والأجنبية التي تناولت مجال وأهداف البحث منذ خمس سنوات ولحد الآن:

Reference:

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Lee W Riley<sup>1\*</sup>, Albert I Ko<sup>2,3</sup>, Alon Unger<sup>4</sup> and Mitermayer G Reis<sup>3</sup>  
<http://www.biomedcentral.com/1472-698X/7/2>

2. **Social determinants put women at risk of tuberculosis (TB)**  
Continue reading at NowPublic.com: **Social determinants put women at risk of tuberculosis (TB) | NowPublic News Coverage** <http://www.nowpublic.com/health/social-determinants-put-women-risk-tuberculosis-tb#ixzz1yhYJZAt2>
3. Risk factors and social determinants of TB:  
[http://www.bc.lung.ca/association\\_and\\_services/documents/KnutUnionNARTBriskfactorsanddeterminantsFeb2011.pdf](http://www.bc.lung.ca/association_and_services/documents/KnutUnionNARTBriskfactorsanddeterminantsFeb2011.pdf)
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**5- Risk factors for pulmonary tuberculosis in Russia: case-control study**  
<http://www.bmj.com/content/332/7533/85>

الأسباب المنطقية لإجراء البحث : The aims of this study are to evaluate the role of demographic , socio-economic and health-related factors , such as non-communicable diseases, in patients with TB.

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١٦. طرق البحث :

أ- تصميم البحث a

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ب- حجم العينة ( 4 3

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# نظام الموافقة على مشروع بحث

## Proposal Format for research project protocol

أ- حجم العينة ٨٧٢

Cases=٤٣٦

Controles=٤٣٦

ب- الطرق الإحصائية لتحليل البيانات ٥-٦ using RDS analysis Tool V

١٥. موافقة اللجنة الأخلاقية المبدئية: تؤيد أن مشروع البحث نال الموافقة المبدئية من اللجنة

عضو	عضو	عضو
الاسم	الاسم	الاسم
المهنة	المهنة	المهنة

عضو: حسن لقيطه مرنه  
عضو: صبار تاوني شابر  
رئيس اللجنة: د. كريم صويح  
عضو: د. محمد حسن

التوقيع  
اسم الباحث التالفي  
د. محسن جارا الله الفرطوسي


التوقيع  
اسم الباحث التالفي  
د. عبد الكريم فزاع عبد الله

مصادقة مدير دائرة الباحث  
التاريخ

مصادقة المشرف العلمي

دائرة صحة ميسان  
مكتب المدير العام

## Annex (5)

	<p>جمهورية العراق وزارة الصحة مركز تدريب وتطوير الملاكات شعبة البحوث والوسائل التعليمية</p>
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### ١ - استمارة الموافقة المبدئية لمشروع بحث

يمكن الحصول على النموذج من موقع وزارة الصحة الالكتروني [www.moh.gov.iq](http://www.moh.gov.iq)



وزارة الصحة  
مركز تدريب وتطوير الملاكات  
شعبة البحوث

# 2011

#

١. رقم المشروع (يملاً من قبل شعبة البحوث)

٢. أسم مشروع البحث (باللغة العربية / الانكليزية)

--- عوامل اختطار مرض التدرن في محافظات جنوب العراق (البصرة، الناصرية وميسان خاصة في منطقة الاهوار

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٣. أسم الباحث الرئيس: العمر: ٤٨ الجنس ذكر الدرجة العلمية بكوريوس  
 د.عبد الكريم فزاع عبد الله  
 عنوان الباحث الرئيسي: الهاتف: ٠٧٧٠٠٦٠٤٥٢٣ البريد الالكتروني: mi s  
 دائرة صحة ميسان /العيادة الاستشارية للأمراض الصدرية  
 ٤. أسم المشرف العلمي إن وجد :

٥. الباحثون المشاركون

I-د ليث الصالحي

ii-د-محسن جارالله

iii

iv

v

٦. أ- موقع مشروع البحث للباحث : الوزارة الصحة المؤسسة  
 القسم:الصحة العامة الشعبة:العيادة الاستشارية للأمراض الصدرية والتنفسية  
 الموقع الميداني العيادة الاستشارية للأمراض الصدرية والتنفسية ووحدات التدرب في محافظات البصرة ، الناصرية وميسان  
 / ب - كتاب تأييد من دائرة الباحث العدد ١٩٣٤١ في ٣ ١٢ / ٢٠١٢

٧. مجال مشروع البحث :

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ج- علوم السياسات الصحية ( ) He a السياسات الصحية، الأنظمة الصحية، التحليل

( الاقتصادى فرع البحث الدقيق

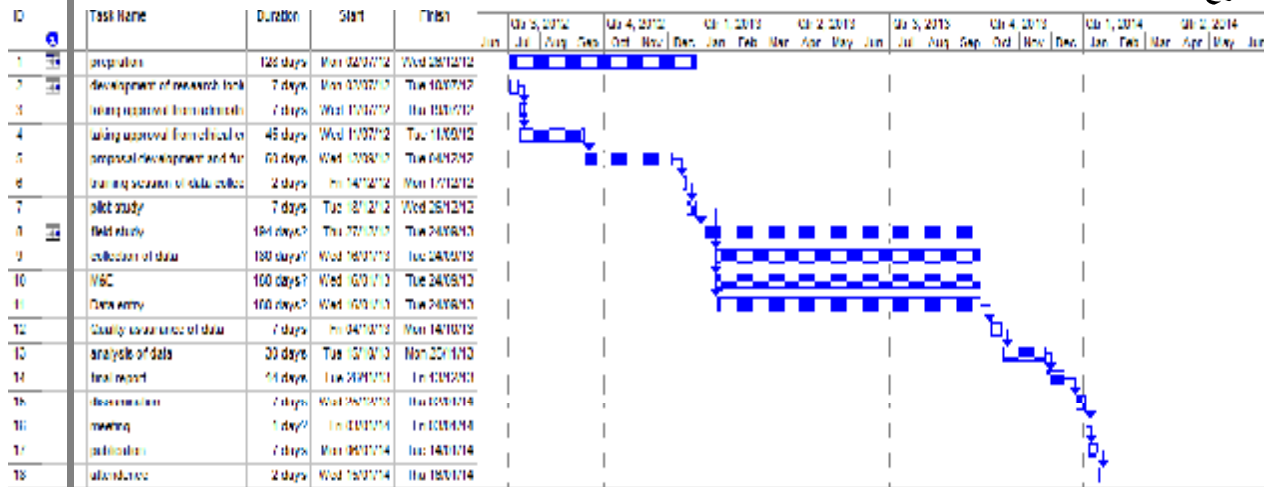
د- أخرى تذكر

٨. الجهة الممولة للمشروع: الصندوق العالمي / منظمة الصحة العالمية تفاصيل الدعم: منحة الصندوق العالمي / الدورة التاسعة نوع الدعم: مالي

٩. مدة المشروع / ٦ أشهر / من ١ ٥ ٢٠١٣ إلى ١ ١٠ ٢٠١٣

الجدول الزمني لإنجاز

المشروع



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١٢. نوع المشروع بحث أولي + ( بحث ثانوي

( وأخرى تذكر

Exp

١٣. هدف أهداف البحث

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١٤. عناوين أهم البحوث العراقية والأجنبية التي تناولت مجال وأهداف البحث منذ خمس سنوات ولحد الآن:

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3. Risk factors and social determinants of TB:  
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١٦. طرق البحث :

أ- تصميم البحث a

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ب- حجم العينة ( 4 3

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# نظام الموافقة على مشروع بحث

## Proposal Format for research project protocol

أ- حجم العينة 872

Cases=436

Controles=436

ب- الطرق الإحصائية لتحليل البيانات using RDS analysis Tool V 5-6

١٥ موافقة اللجنة الأخلاقية المبدئية: تؤيد أن مشروع البحث نال الموافقة المبدئية من اللجنة

عضو	عضو	عضو
د. صباح أنصاري	د. صباح أنصاري	د. صباح أنصاري
الاسم	الاسم	الاسم
المهنة	المهنة	المهنة

رئيس اللجنة  
الاسم  
المهنة

عضو  
الاسم  
المهنة

التوقيع  
اسم الباحث الثلاثي  
د. محسن جارا الله القرطوسي

التوقيع  
اسم الباحث الثلاثي  
د. عبدالكريم فزاع عبدالله

مصادقة  
مدير دائرة الباحث  
التاريخ

مصادقة المشرف العلمي  
د. ثامر كاظم يوسف الحلبي

دائرة صحة ميسان  
مكتب المتابعة الصحية

## Annex (7)

	<p>جمهورية العراق وزارة الصحة مركز تدريب وتطوير الملاكات شعبة البحوث والوسائل التعليمية</p>
---	---

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وزارة الصحة  
مركز تدريب وتطوير الملاكات  
شعبة البحوث

# 2011

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 دائرة صحة ميسان /العيادة الاستشارية للأمراض الصدرية  
 ٤. أسم المشرف العلمي إن وجد :

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I-د ليث الصالحي

ii-د محسن جارالله

iii

iv

v

٦. أ- موقع مشروع البحث للباحث : الوزارة الصحة المؤسسة الدائرة:دائرة صحة ميسان  
 القسم:الصحة العامة الشعبة:العيادة الاستشارية للأمراض الصدرية والتنفسية  
 الموقع الميداني العيادة الاستشارية للأمراض الصدرية والتنفسية ووحدات التدنن في محافظات البصرة ، الناصرية وميسان  
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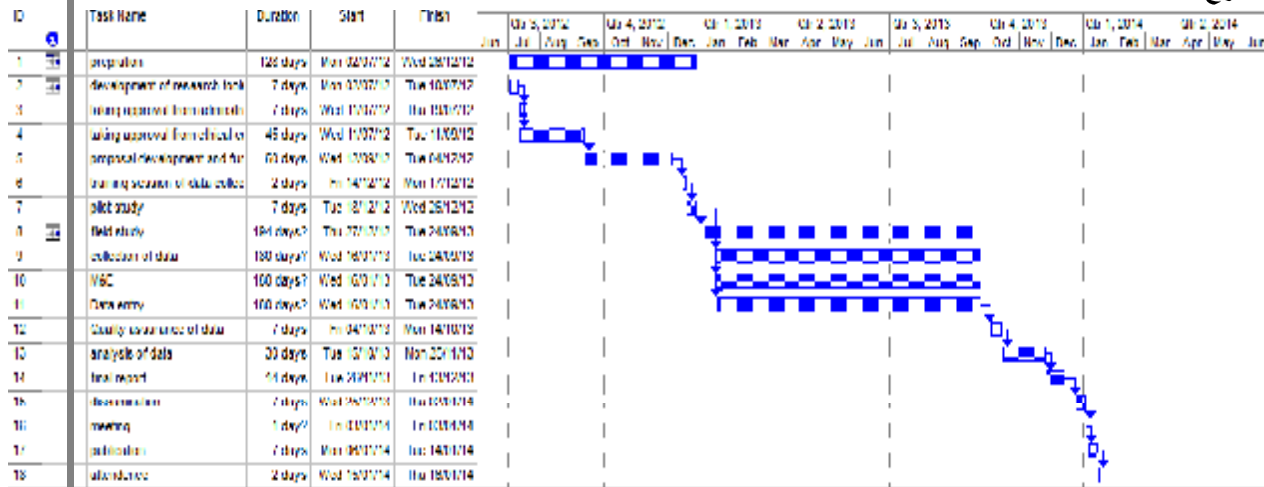
د- أخرى تذكر

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الجدول الزمني لإنجاز

المشروع



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١٢. نوع المشروع بحث أولي +

بحث ثانوي

وأخرى تذكر

Exp

١٣. هدف أهداف البحث

/ 1 o 1

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3. Risk factors and social determinants of TB:  
[http://www.bc.lung.ca/association\\_and\\_services/documents/KnutUnionNARTBriskfactorsanddeterminantsFeb2011.pdf](http://www.bc.lung.ca/association_and_services/documents/KnutUnionNARTBriskfactorsanddeterminantsFeb2011.pdf)
4. An epidimiological evaluation of risk factors for tuberculosis in South India: a matched case control study <http://www.ncbi.nlm.nih.gov/pubmed/16466042>

**5- Risk factors for pulmonary tuberculosis in Russia: case-control study**  
<http://www.bmj.com/content/332/7533/85>

الأسباب المنطقية لإجراء البحث : The aims of this study are to evaluate the role of demographic , socio-economic and health-related factors , such as non-communicable diseases, in patients with TB.

.١٥

: ١٦. طرق البحث

a - تصميم البحث c

ب- حجم العينة ( 4 3 8 7 2

# نظام الموافقة على مشروع بحث

## Proposal Format for research project protocol

أ- حجم العينة 872

Cases=436

Controles=436

ب- الطرق الإحصائية لتحليل البيانات using RDS analysis Tool V 5-6



١٥. موافقة اللجنة الأخلاقية الميدانية: تؤيد أن مشروع البحث تال الموافقة عليها من اللجنة

عضو

الاسم

المهنة

عضو  
الاسم  
المهنة

عضو

الاسم

المهنة

عضو  
الاسم  
المهنة

رئيس اللجنة

الاسم

المهنة

عضو

الاسم

المهنة

التوقيع  
اسم الباحث الداعي

د. محسن جبار الله القروسي

مصادقة

مدير دائرة البحث

التاريخ

التوقيع

اسم الباحث الداعي

د. عبد الكريم فراج عبدالله

مصادقة المشرف العلمي

د. ناهي كاظم يوسف الخنثي

مصادقة  
مكتب المدير العام

**WORLD HEALTH ORGANIZATION-IRAQ    MINISTRY OF HEALTH-IRAQ**

**NATIONAL TB CONTROL PROGRAM**

**2011-2012 Operational Research Grants**

**Risk factors of TB in southern Iraq with specific  
focus on governorates with marshland populations**

***Investigators:***

**Dr Abdulkareem Fazza**

MBChB, GP

Manager of Chest and Respiratory Disease Clinic in Misan Governorate

**Dr Fadhil Abbas Ali**

BMChB, DTM

Manager of National TB Control Program- Iraq

**Dr Layth Ghazi Salihi**

MBChB, IBMS-CM

Medical Officer-National TB Control Program-Iraq



## Summary

**Background:** Tuberculosis (TB) ranks as the second leading cause of death from a single infectious agent. As a consequence of the marsh drainage and destruction, the largely displaced and widely persecuted marsh dwellers still suffer from economic loss, inadequate nutritional intake, and poor primary health care and absence of acceptable drinking water. There is no clear figure for influence of such residential areas and related risk factors on TB in Iraq. This study aims at exploring risk factors of TB in southern Iraq with special focus on marshlands population

**Methods:** this is a case control study conducted in three southern governorates of Iraq (Basrah, Thi qar and Misan). Cases were patients discovered during data collection time and control were matched for residence, age and sex enrolled while attending a primary health care center for complaints unrelated to TB. Data collection was during May to Mid September 3013 by structured interviews by a trained team of investigators. Multivariate logistic regressions adjusted for age and sex were used to measure the degree of associations between studied factors and occurrence of tuberculosis.

**Results:** Study sample composed of 455 new cases of TB and 444 controls. Males constituted 47% of both study groups. **Age older than 65** year increases the risk to have TB (OR= 2.7). **Over weight, obesity I, and obesity II**, decrease the risk of TB (OR< 1). **Under weight** increases the risk of TB (OR=2.4). Education level as **illiterate** or having not more than **primary** education increases the risk of TB (OR>1). **Hard worker** or **farmer, unemployment** and **students** increase the risk of TB (OR> 1). Positive **family history of TB** increases the risk of TB (OR> 1). The longer the duration of use of **Dexamethasone** medication the more the

risk of TB ( $OR \approx 1.1$ ). Living/residing in **other than urban setting** (or displaced) increases the risk of TB ( $OR=1.3$ ). Home built from **mud** increases the risk of TB ( $OR \approx 1.7$ ). Home with **no windows** increase the risk of TB ( $OR=2.2$ ). Increase in **family size** and increase in number of family members older than 15 year increases the risk of TB ( $OR > 1$ ). Drinking **non-sterile milk** increases the risk of having TB ( $OR=3.9$ ).

**Conclusions:** Predictors for tuberculosis include: age older than 65, under weight, single status, low education level, hard work/farming, student status and unemployment, family history of TB, long duration of Dexamethasone use, non-urban residence (rural, marshland or displace people), homes built from mud, homes not provided with windows (i.e. not proper ventilation or sun-light illumination), large family size, drinking non-sterile milk, use of kerosene as s cooking fuel.

## List of Contents

<b><u>Subject</u></b>	<b><u>Page No.</u></b>
Summary .....	I
List of tables.....	IV
List of figures.....	V
List of abbreviations.....	VI
Introduction.....	1
Subjects and Methods.....	3
Results.....	8
Discussion.....	26
Recommendations and Recommendations.....	31
References.....	32



## List of tables

<b><u>Table No.</u></b>		<b><u>Page No.</u></b>
1	Demographic distribution of three governorates (Basrah, Misan & Thi qar), Iraq, 2011.	3
2	Personal characteristics of study sample	9
3	Distribution of participants according to study group and to related medical history	16
4	Distribution of environmental factors for each study group.	17
5	Multivariate logistic analysis for personal characteristics.	20
6	Multivariate logistic analysis for items of medical history	23
7	Multivariate logistic analysis for environmental characteristics	24

## List of figures

<b><u>Figure No.</u></b>		<b><u>Page No.</u></b>
1	Frequency distribution (number of participants) according to study group and to sex.	11
2	Percent distribution of study sample according to study group and age category.	12
3	Percent distribution of participants according to study group and to BMI category.	13
4	Percent distribution of study sample according to study group and to family history of TB.	15

## **List of Abbreviations**

<b>BMI</b>	Body Mass Index
<b>CI</b>	Confidence Interval
<b>DOTS</b>	Directly Observed Therapy Short course
<b>HIV</b>	Human Immunodeficiency Virus
<b>OR</b>	Odd Ratio
<b>PHCCs</b>	Primary Health Care Centers
<b>SD</b>	Standard Deviation
<b>SPSS v20</b>	Statistical Package for Social Sciences version 20
<b>TB</b>	Tuberculosis
<b>NTP</b>	National Tuberculosis Control Program
<b>WHO</b>	World Health Organization

## Annex (1)

استبانة الدراسة: "عوامل اختطار مرض التدرن في جنوب العراق مع التركيز على الأهوار"

رقم الاستمارة:

نوع المشارك:

(تدرن/مقارنة)

سنة ( )

### أولاً- الخصائص السكانية

السؤال (١) ما هو عمرك بالسنوات؟

السؤال (٢) الطول ( ) سم

الوزن ( ) كغم

السؤال (٣) الجنس ؟

١	ذكر
٢	أنثى

السؤال (٤) الحالة الاجتماعية

١	مطلق
٢	أرمل
٣	أعزب
٤	متزوج

السؤال (٥): ما هو أعلى مستوى تعليمي حصلت عليه؟

١	امي
٢	يقرا ويكتب
٣	التعليم الابتدائي
٤	التعليم الإعدادي
٥	شهادة جامعية فما فوق
٦	أخرى (الرجاء التحديد.....)

سؤال (٦): ما هو نوع العمل؟

١	موظف
٢	عامل/فلاح
٣	متقاعد
٤	تاجر
٥	طالب
٦	عاطل عن العمل
٧	ربة بيت
٨	عسكري
٩	اخرى (تذكر .....)

السؤال (٧) هل ان مجال عملك يعرضك للتلوث بواسطة :-

١	الرمال والأتربة
٢	الدخان
٣	مخالطة الحيوانات
٤	اخرى (تذكر .....)
٥	لا يوجد تعرض للتلوث

السؤال (٨): كم يبلغ مصروفك الشهري، بالدينار العراقي؟

١	أقل من ١٢٥٠,٠٠٠ د
٢	بين ٢٥٠,٠٠٠ – ١٠٠٠,٠٠٠ د
٣	أكثر من ١٠٠٠,٠٠٠ د

السؤال (٩): ما هو مكان إقامتك الحالي؟

١	نازح من داخل المحافظة
٢	نازح من محافظة أخرى
٣	اهوار
٤	ريف
٥	حضر

## ثانياً- الخصائص (العوامل) الصحية

السؤال (١٠): كم يبعد مكان سكنك عن أقرب عيادة صحية أو مستشفى؟

١	١٠-٠ كم
٢	٢٠-١١ كم
٣	٣٠-٢١ كم
٤	أكثر من ٣٠ كم

السؤال (١١): ١- هل تدخن السكائر

١	نعم
٢	لا

ب- إذا كنت تدخن السكائر ما هو عدد سنوات التدخين.....سنة

ج – ما عدد السكائر التي تدخنها يوميا .....سكارة

السؤال (١٢): ١- هل تدخن النرجيلة

١	نعم
٢	لا

ب – إذا كنت تدخن النرجيلة ، ما هو عدد سنوات التدخين .....سنة

السؤال (١٣): هل أصبت سابقاً بمرض السل؟

١	نعم
٢	لا

السؤال (١٤): هل أصيب احد افراد اسرتك بمرض السل؟

١	نعم
٢	لا

السؤال (١٥) هل تعاني من  
١ - حساسية القصبات الهوائية

١	نعم	
٢	لا	

إذا كانت الاجابة نعم منذ متى ؟ .....

ب - امراض صدرية اخرى

١	نعم	
٢	لا	

ب - إذا كانت الاجابة نعم ، اذكر نوع الاصابة .....

ج - كم عدد السنوات ..... سنة

ج - اورام

١	نعم	
٢	لا	

د - مرض السكر

١	نعم	
٢	لا	

منذ متى (.....) سنة

هـ - هل اخبرت بانك مصاب بفقر الدم

١	نعم	
٢	لا	
٣	لا اعرف	

السؤال (١٦) ١ - هل تعاني من مرض مزمن يعالج بالكورتيزون

١	نعم	
٢	لا	
٣	لا اعرف	

ب - إذا كانت الاجابة (نعم) ما عدد سنوات استخدام العلاج (.....) سنة

السؤال (١٧): هل سبق وان استخدمت حب او شراب دواء يسمى دكسن ؟

١	نعم	
٢	لا	
٣	لا اعرف	

إذا كانت الاجابه نعم اذكر المدة ..... بالشهور

السؤال (١٨) أ - هل لقحت ب لقاح ال بي سي جي

١	نعم	
٢	لا	

ب - هل توجد ندبة للقاح ا لبي سي جي على الكتف الايسر

١	نعم	
٢	لا	

### ثالثاً:- الخصائص (العوامل) البيئية

السؤال (١٩): هل تسكن بالقرب من معامل الطابوق او من حقول انتاج النفط ( في حدود ١-٢ كم ) ؟

١	نعم	
٢	لا	

السؤال (٢٠) ان الوقود المستخدم في الطبخ هو:-

١	الغاز	
٢	النفط	
٣	الخشب وفضلات الحيوانات	
٤	مختلط	

السؤال (٢١): هل يوجد في البيت مكان مخصص للطبخ – مطبخ ؟

١	نعم	
٢	لا	

السؤال (٢٢): ١- ما عدد افراد الاسرة الذين يسكنون في البيت نفسه ؟

( )

ب – عدد الغرف .....

ج – عدد افراد الاسرة فوق سن ١٥ سنة .....

السؤال (٢٣) البيت الذي تسكنه مبني من :-

١	القصب والبردي	
٣	الطين	
٣	الطابوق	
٤	الصفيح	

السؤال (٢٤): يبلغ عدد النوافذ (الشبابيك) في كل غرفة . ؟

١	لا توجد	
٢	١	
٣	٢ او اكثر	

السؤال (٢٥) هل تشرب الحليب بدون تعقيم (بدون الغلي على النار)؟

١	نعم	
٢	لا	

السؤال (٢٦) هل تقوم الاسرة

١	بتربية الحيوانات داخل البيت	
٢	بتربية الحيوانات خارج البيت	
٣	لا توجد تربية للحيوانات	

## Annex (2)

### Study Questionnaire Form the entitled study " Risk factors of TB in southern Iraq with specific focus on governorates with marshland populations"

ID:

Participant type: ( Case/Control)

Q1: Age ( )year

Q2: Height ( ) cm, Weight ( ) kg

Q3: Gender

1	Male	
2	Female	

Q4: Marital Status

1	Divorced/Separated	
2	Widow	
3	Single	
4	Married	

Q5: Education

1	Illiterate	
2	Read and write	
3	Primary school	
4	Preparatory school	
5	Higher than preparatory school	
6	Others (Specify _____)	

Q6: Occupation

1	Employee (governmental)	
2	Hard worker/farmer	
3	Retired	
4	Free work	
5	Student	
6	Unemployed	
7	Housewife	
8	Military	
9	Others (specify _____)	

Q7: Exposure to workplace pollutants

1	Dusts and sands	
2	Smoke	
3	Contact to animals	
4	Others (specify _____)	
5	No exposure to pollutants	

Q8: Monthly income of the family (in local Iraqi currency; ID)

1	< 250,000	
2	250,000-1000,000	
3	> 1000,000	

Q9: Your recent area of residence is

1	Internally displaced –from the same governorate	
2	Internally displaced –from other governorate	
3	Marshland area	
4	Rural	
5	Urban	



Q10: Distance between residence and nearest health facility

1	Up to 10 Km	
2	11-20 Km	
3	21-30 Km	
4	> 30 Km	

Q11-A: Do you smoke cigarettes?

1	Yes	
2	No	

B: if yes, duration is \_\_\_\_\_ years

C: if yes, Number of daily smoked cigarettes is \_\_\_\_\_

Q12-A: Do you smoke Argela?

1	Yes	
2	No	

B: if yes, duration is \_\_\_\_\_ years

Q13: Did you have TB before?

1	Yes	
2	No	

Q14: Did any of your family have TB before?

1	Yes	
2	No	

Q15: Do you suffer from:

A-Allergic bronchitis/Ashtma

1	Yes	
2	No	
	If yes, for _____ years	

B-other chest diseases

1	Yes	
2	No	
	If yes; type of this chest disease is _____	
	If yes, before _____ years	

C-Tumors

1	Yes	
2	No	

D-Diabetes Mellitus

1	Yes	
2	No	
	If yes, for _____ years	

E-Do you have anemia

1	Yes	
2	No	
3	Do not know	

Q16-A: Do you suffer from a chronic diseases needs steroid treatment

1	Yes	
2	No	
3	Do not know	

B-: if yes, for how long? \_\_\_\_\_ years

Q17-A: Have you used Dexon (Dexamethasone) medications?

1	Yes	
2	No	
3	Do not know	
	B-: if yes, for how long? _____ months	

Q18-A: Immunized with BCG?

1	Yes	
2	No	
	B: BCG scar is evident on left shoulder?	
1	Yes	
2	No	

Q19: Live within 1-2 Km near to brick factory or oil facility?

1	Yes	
2	No	

Q20: Your cooking fuel is

1	Natural gas	
2	Kerosene	
3	Wood/animal debris	
4	Mixed	

Q21 Is there a place at home allocated for cooking (kitchen)?

1	Yes	
2	No	

Q22-A: Number of family members sharing home with you \_\_\_\_\_

B: Number of rooms \_\_\_\_\_

C: Number of family members older than 15 \_\_\_\_\_

Q23: Your home is built from

1	Rubble and paper	
2	Clay	
3	Plaster	
4	Bricks	

Q24: At residence, number of windows in each room is

1	None	
2	One	
3	Two or more	

Q25: Do you drink non-sterile milk (non-boiled/non-pasteurized milk)?

1	Yes	
2	No	

Q26: Animal Husbandry

1	Inside home as well	
2	Outside home	
3	No livestock	

### Annex (3)

<i>Data collectors</i>	<i>Job title</i>	<i>Job address</i>	<i>Name in arabic</i>
------------------------	------------------	--------------------	-----------------------

#### Basrah governorate

1-Dr Dhia Buchit	GTC	Basra TB Clinic	د ضياء بخيت
2- Dr Dhia Mahmood	Physician of GTC	Basra TB Clinic	د ضياء محمود
3-Dr Suad Hasson	DTC	Basra 1 <sup>st</sup> DTC	د سعاد محمود
4-Dr Star Farhan	DTC	Basra 2 <sup>nd</sup> DTC	د ستار فرحان
5-Dr Yasin Salih	DTC	Al-Qurna DTC	د ياسين صالح
6-Dr Abdulhusain Dawood	DTC	Al-Madaina DTC	د عبد الحسين داود
7-Dr Alia Abdulmunim	DTC	Al-Zubair DTC	د علياء عبد المنعم
8- Dr Khalid Ahmid	DTC	Shat al-Arab DTC	د خالد احمد
9-Dr Muhsin Ali	DTC	Al-Hartha DTC	د محسن علي
10- Dr Amal Abas	DTC	Abo al-Kasib DTC	د امل عباس

#### Thi-Qar governorate

11-Dr Hashim Ahmid	GTC	Thi-Qar TB Clinic	د هاشم احمد البطاط
12- Dr Isra Abduljabar	DTC	Nasyria 1 <sup>st</sup> DTC	د اسراء عبد الجبار
13- Dr Hussain Riad	DTC	Nasyria 2 <sup>nd</sup> DTC	د حسين رياض
14- Dr Ahmid Yunis	DTC	Sookashiok DTC	د احمد يونس
15- Dr.Qais Jasim	DTC	Al-chibaesh DTC	د قيس جاسم
16- Dr Muhamid Ali	DTC	Al-Shatra DTC	د محمد علي
17- Dr Bashar Sharhan		Al-Rifae DTC	د بشار شرهان

#### Missan governorate

18- Dr Zuhair Abdulkarim	Physician of GTC	Missan TB Clinic	د زهير عبد الكريم
19- Dr Salah Jasim	DTC	Al-Emara DTC	د صلاح جاسم
20-Dr Lamia Dawood	DTC	Al-Majar DTC	د لمياء داود
21- Dr Ahmid Hassan	DTC	Qalat-Salih DTC	د احمد حسن
22-Dr Baha Abdulhusain	DTC	Ali –Gharbi DTC	د بهاء حسين

**Annex (4)**

**National Tuberculosis Control Program / IRAQ**

**WHO 2011 – 2012 Grant for Operational Research**

**Sub-Activity Technical Report**

**Study Project Title:-**

**Risk factors of Tuberculosis in The Southern Governorates(Basra ,Thi-qar and Missan) with particular focus on Marshlands / Iraq /2012.**

**Principal Investigator:- Dr.Abdulkarim Fazza Abdulla**

**Type of sub-activity:- Training Session**

**Title: - Training session for Study Data Collectors.**

**Date: - December 16<sup>th</sup> - 17<sup>th</sup> 2012.**

**Venue:- Respiratory and Chest Clinic in Missan.**

**Agenda:-**

Day &Time	Agenda	Facilitator
Day 1		
9:30-9:45	Greeting	Dr Abdulkarim
9:45-10:15	Objectives of the training session	Dr Abdulkarim
10:15-10:30	Coffee break	
10:30-11:30	Priorities of Operational Research in Tuberculosis	Dr Muhsin
11:30-12:00	Discussion	
12:00-1:00	Risk Factors of TB	Dr Abdulkarim
1:00- 1:30	Reviewing the Questionnaire form	Dr Muhsin & Dr Abdulkarim
Day 2		
9:00-10:00	Discussion	
10:00-10:15	Coffee break	
10:15-1:15	Work group	
1:15-2:00	Discussion	

**Aim of this training session:**

Prepare study personnel for the study implementation.

**Objectives:**

- 1- Obtain a panoramic view about the study; its objectives, methodology, tools and implementation.
- 2- Train and discuss study tool and pretesting for a final version.

**Facilitators:**

1-Dr Muhsin Jaralla (TB Coordinator of Iraqi Southern Gov.)

2-Dr Abdulkarim Fazza (Manager of Missan TB Clinic)

## Participants:

### Description of the Session:

The 2 days training course is for training the study staff primarily to become familiar with collection of the data from both cases and controls who subject to inclusion and exclusion criteria.

The aim of this course is mostly concentrated on reviewing the structured questionnaire which was developed for this study.

#### Day 1

Introduction to the study and its purposes followed by illustration the priorities of the operational research as one component of the stop TB strategies.

Details about different factors which are associated with TB are discussed.

At the end of the first day questionnaire forms are distributed to each participant for reviewing , clarify confusing items , comment on apparent validity of each items.

#### Day 2

Open discussion was continuous , after that the participants are divided into three groups , interviewing done between participants ,and with the patients attending the TB Clinic ,each interview last approximately 10 minutes and the structured questionnaire remained as it.

## Participants:

- 1-Dr Dhia Buchit -Basra GTC
- 2- Dr Dhia Mahmood- Basra TB Clinic doctor
- 3-Dr Suad Hasson- Basra 1<sup>ST</sup> DTC
- 4-Dr Ali Mutlaq- Basra 2<sup>nd</sup> DTC.
- 5-Dr Iman Shanbar- Qurna DTC.
- 6-Dr Abdelhusain Dawood – Al-medaina DTC.
- 7-Dr Alia Abdelmunim – Al-Zubair DTC.
- 8- Dr Nasir Abdulaziz- Shat al-Arab DTC.
- 9-Dr Muhsin Ali – Al-hartha DTC.
- 10- Dr Sadiq Jawad – Aboalkasib DTC.
- 11-Dr Hashim Ahmid – Dhiqar DTC.
- 12- Dr Isra Abdeljabar Nasyria 1<sup>st</sup> DTC.
- 13- Dr Abas Awad .Nasyria 2<sup>nd</sup> DTC.
- 14- Dr Ahmid Yunis – Soq elshough DTC.
- 15- Dr.Qasim Jasim Alchibaish DTC.
- 16- Dr Muhamid Ali –Alshatra DTC.
- 17- Dr Bashar Sharhan –Alrifai DTC.
- 18- Dr Zuhair Abdulkarim –Missan TB Clinic doctor.
- 19- Dr Salah Jasim – Al-emara DTC.
- 20-Dr Lamia Dawood –Almajar DTC.
- 21- Dr Ahmid Hassan –Qalat-Salih DTC.
- 22- Dr Baha Abdelhusain – Ali-Gharbi DTC

















**National Tuberculosis Control Program  
National Meeting Activity**



Governorate:MISSAN		Date: Dec 16 <sup>th</sup> -17 <sup>th</sup> -2012		
Activity title: training session on cross sectional study about risk factors of TB in Southern governorate with marshlands			Activity code:	
Attendant List				
1 <sup>st</sup> Day	2 <sup>nd</sup> Day	Job Address	Name	No.
		Basra GTC	Dr. Dhia Buchit	1
		Basra 1 <sup>st</sup> district	Dr. Suad Hasson	2
		Basra 2 <sup>nd</sup> district	Dr. Ail Mutleg	3
		Qurna district	Dr. Iman Shantbar	4
		Al-medena district	Dr. Abdelhusin Dawood	5
		Shat Al-Arab district	Dr. Nasir Abdulaziz	6
		Al- Zubair district	Dr. Aila Abdulmunim	7
		Al-Hartha district	Dr. Muhsin Ail	8
		Aboalkhasib district	Dr. Sadiq Jawad	9
		Dhi Qar GTC	Dr. Hashim Ahmid	10
		Nasyria 1 <sup>st</sup> district	Dr. Isra Abdejabar	11
		Nasyria 2 <sup>nd</sup> district	Dr. Abas Awad	12
		Suq elshouogh district	Dr. Ahmid Yonis	13
		Altchibaish district	Dr. Kasim Jasim	14
		Alshatra district	Dr. Muhamid Ali	15
		Alrifai district	Dr. Bashar Sharhan	16
		Missan TB clinic Doctor	Dr. Zuhair Abdulkarim	17
		Ammara district	Dr. Salah Jasim	18
		Majer district	Dr. Lamia Dawood	19

		Qalat- Salih district	Dr. Ahmid Hassan	20
		Ali-Ghargi district	Dr . Baha Abdelhussien	21
		Participant Dr. Diyahmahmed		22
				23
				24
				25
				26
				27
				28
				29
		FACILITATOR	Dr. Abdulkarim Fazza	30
		FACILITATOR	Dr. Muhsin Jaralla	31
		SECRETARIAL	Mohammed Gulw	32
		SECRETARIAL		

  
 Approved by GTC  
 Dr. Abdul Karim Fazza



  
 Approved by DOH

Approved by NTP Manager



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Dr Abdulkarim Fazza Abdulla  
MissanTB Coordinator



## Annex (8)

### الموافقة المستنيرة لأفراد المجتمع والمرضى

١. عنوان الدراسة: عوامل الاختطار لمرض التدرن (السل) في جنوب العراق خاصة في منطقة الاھوار
٢. الغرض من الدراسة: البحث في عوامل اختطار مرض السل من أجل الحصول على المعلومات لتعزيز عملية الكشف المبكر للمرض وتقديم خدمات البرنامج الوطني لمكافحة السل بشكل صديق وسهل وممكن ومجاني للمريض.
٣. الإجراء: نود التعرف على عوامل الاختطار المتعلقة بمرض السل عن طريق الاستبيان لغرض الوصول الى المجاميع التي تكون اكثر عرضة من غيرها للاصابة بمرض التدرن مما يساهم في الكشف المبكر وبدء المعالجة لمنع انتشار المرض.
٤. المخاطر/المتاعب: لا توجد مخاطر ناتجة عن مشاركتك في هذه الدراسة حتى وإن قررت عدم الإجابة عن أي سؤال أو قررت إيقاف المقابلة في أي وقت.
٥. الفوائد: لا توجد فوائد شخصية لك من المشاركة في الدراسة. ومن المتوقع وجود منافع مجتمعية عن الدراسة حيث ستعمل السلطات الصحية على الاستفادة من معلومات الدارسة لتحسين الخدمات الصحية المقدمة لمرضى السل والمجتمع.
٦. حقوق المشاركين: تعد مشاركتك طوعية وقد تختار إيقاف المقابلة في أي وقت ودون شروط. ومن حقك الاستفسار عن اية نقاط غير مفهومة
٧. السرية: لن يتم التصريح عن إجاباتك لأي شخص وستبقى مجهولة الهوية. ولن تتم كتابة اسمك على الاستبيان أو الاحتفاظ بها في أي سجلات أخرى. وسيتم إتلاف البيانات في حال الانسحاب من المقابلة. ويمكن الوصول إلى المعلومات فقط من قبل أعضاء فريق البحث ولأغراض البحث فقط.

للاستفسار الاتصال على الموبايل ٠٧٧٠٠٦٠٤٥٢٣

### نموذج الموافقة

#### موافقة المشارك

أعلن أنه قد تم تزويدي بالمعلومات أعلاه وتم شرحها لي وكان لدي كامل الفرصة في طرح الأسئلة وحصلت على إجابات كافية حول كافة الأسئلة التي طرحتها. وأعلن عن مشاركتي الطوعية في هذه الدراسة وأنا على معرفة بحقي الكامل في الانسحاب من الدراسة دون أي شروط.

اسم المشارك:-----

توقيع المشارك:-----

في حال عدم قدرة المشارك على قراءة النموذج وحاجته لشخص لشرح/ترجمة النموذج.

اسم الشخص الذي قام بشرح/ترجمة النموذج:-----

عنوان الشخص الذي قام بشرح/ترجمة النموذج:-----

توقيع الشخص الذي قام بشرح/ترجمة النموذج:-----

توقيع القائم بالمقابلة:-----

## **Annex (9)**

### **Informed consent form- TB patients and community members (control group)**

1. Study title: Risk factors for tuberculosis in southern governorates with specific focus on marshland areas.
2. Aim of the study: to study factors associated with or predict TB to enhance early TB case detection and provide national TB program services in friendly, easily, feasible and free for TB patients.
3. Procedures: Information about risk factors of TB are questioned through interviews of risk groups, so as to contribute to early detection and early treatment of TB and prevent its spread.
4. Hazards: No specific hazards/risks will yield from your participation in this study even if you decided not to respond to any question or to cancel or stop the interview.
5. Benefits: no special benefits at personal level, but at community level; health services will utilize study data to improve provided health services for TB patients and for the community.
6. Participant's rights: Your participation is completely voluntary and you may finalize the interview in any time as you want, and you have the right to request interviewers to explain any non-clear statements or questions.
7. Confidentiality: your responses will be kept confidential and anonymous. Your data will be discarded if you withdraw from the interview. Information accessed only by study personnel.

If you have any question, please call mobile on 07700604523

#### **Consent Form**

##### **Participant's Consent**

I have been well informed about this study and had the opportunity to ask and have suitable clarifications and I document my voluntary participation in this study while I am knowledgeable of my right to completely withdraw without a condition from this study.

Participant Name:

Participant Signature:

If the participant cannot read this form and needed for another person to explain and interpret it:

Name of person interpreted this form:

Address of person interpreted this form:

Signature of person interpreted this form:

Signature of interviewer: