RESEARCH ARTICLE

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE TOWARD DIABETIC PATIENTS IN RIYADH CITY, 2016.

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Manuscript Info	Abstract
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Background: Diabetes mellitus (DM) is a global public health problem. he prevalence of diabetes mellitus is increasing and the number of persons with the disease will double by 2025. The management of diabetes mellitus (DM) largely depends on patients' ability to self-care in their daily lives, and therefore, patient education is always considered an essential element of DM management. Studies have consistently shown that improved glycemic control reduces the rate of complications and evidence suggests that patients, who are knowledgeable about DM self-care, have better long term glycemic control.

Objectives: To assess the level of awareness, Attitude And Practice toward diabetes in Riyadh city to identify barriers.

Methods: A cross sectional analytical questionnaire based study among the general population in Riyadh city. This study (2016) was carried out among a sample of 461 subjects. The mean age of citizens was 28,82. To assess citizens' demographic factors and beliefs about diabetes consenting citizens completed an anonymous online questionnaire. The data was entered and analyzed using SPSS version 20.

Results: The sample is consisted of 65,8% women and 34,2% men. Among the respondents 7,7% reported suffering from diabetes and 13,6% confirmed having a history of diabetes illness in their family. The results of the study showed that 153 (34,8%) subjects had weak knowledge related to the disease, 260 (59,1%) subjects had average level of knowledge while only 27 (6,1%) subjects had good knowledge regarding diabetes. There was a statistical significant association between gender, educational level and the level of awareness about diabetes.

Conclusion: diabetes is a chronic disease that is potentially controllable but that cannot be cured. Education still be important overall the treatment of the patients.

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Background:-
Diabetes mellitus (DM) is a global public health problem [1]. he prevalence of diabetes mellitus is increasing and the number of persons with the disease will double by 2025 [2]. The management of diabetes mellitus (DM) largely depends on patients' ability to self-care in their daily lives, and therefore, patient education is always considered an essential element of DM management. Studies have consistently shown that improved glycemic control reduces the rate of complications and evidence suggests that patients, who are knowledgeable about DM self-care, have better long term glycemic control [3-4-5] . Although the prevalence of DM is high among populations in the Middle East and Gulf countries, patients often lack the knowledge and skills to self-manage their condition[6-7-8-9]. During the past three decades, the population of the Kingdom of Saudi Arabia has undergone tremendous changes in lifestyle, primarily leading to decreased physical activity and unhealthy eating habits. These changes have had a considerable negative impact on the health of the society. Indeed, this lifestyle transformation is thought to be responsible for the epidemic of non communicable diseases and their complications in the country[10-11] , Our Study Was Designed To Examine Health Beliefs And Assessment Level OF Awareness Toward Diabetic among Population In Saudi Arabia, Riyadh city And Applies The Health Belief Model To Determine Barriers.

Rationale:-
Diabetes mellitus (DM) is a global public health problem [1]. he prevalence of diabetes mellitus is increasing and the number of persons with the disease will double by 2025 [2]. The management of diabetes mellitus (DM) largely depends on patients' ability to self-care in their daily lives, and therefore, patient education is always considered an essential element of DM management. Studies have consistently shown that improved glycemic control reduces the rate of complications and evidence suggests that patients, who are knowledgeable about DM self-care, have better long term glycemic control [3-4-5] . Although the prevalence of DM is high among populations in the Middle East and Gulf countries, patients often lack the knowledge and skills to self-manage their condition[6-7-8-9].

Objectives:-
General objectives:-
To assess the level of awareness, Attitude And Practice toward diabetes in Riyadh city to identify barriers.

Specific objective:
The goal of this study was to examine community health beliefs regarding diabetes and their perceptions related to it and evaluate the role of demographic factors in shaping beliefs about diabetes and assess possible associations between demographic characteristics with the preventive behavior of interest.

Methods:-
Study design: cross sectional study.

Setting and data collection:
This survey analysis was conducted among community population in Riyadh city. A preformed self-administered questionnaire was distributed among the community population.

Sample:-
Subjects will be chosen according to geographical and sex distribution. Sample size was calculated based on web-site calculator [11] ,taking the total size of Riyadh population (4,087,000) [13] , confidence level (95%) and margin error (5%) to be 285. additional 20 % was added to cover the missing data . The total sample obtained was **360**.

Study population:-
The study population included were both male and female in Riyadh city.

Study tool:-
Pre-formed Self-administered questionnaire that requires information about:
1- Socio-demographic data: age, nationality, gender, education level, income, marital status, and employment status.
2- Risk Factors Associated with diabetes– clinical manifestation of diabetes- incidence and prognosis of diabetes.
3- Beliefs about diabetes assessment including 8 questions. A score of 1 was given right answer and 0 otherwise. For each subject, a maximum score of 8 was calculated. A scoring system was applied to measure the

respondents' beliefs about diabetes. The awareness level was categorized into 3 levels indicated by weak (0–2), average (3-5) and good (6-8).

4- Knowledge about prevention behavior assessment including one question "Do you believe that psychological pressure is one of the diabetes factors?". A score of 1 was given to yes and 0 otherwise. For each subject, a maximum score of 1 was calculated. The knowledge level score was categorized into 2 levels indicated by poor knowledge (0) and good knowledge (1).

Ethical considerations:-
An informed consent was obtained from the participants included in this research before filling the questionnaire.

Statistical analysis:-
Data were entered into the Statistical Package for Social Sciences (SPSS, version 20) and descriptive analysis conducted.

Association of respondents' characteristics with beliefs about diabetes and knowledge about prevention behavior of interest was evaluated using:
1- Frequencies and percentages.
2- Chi-squared test.
3- Independent Samples Test (T-test).
4- ANOVA one-way test.
   Statistical significance was accepted at $p < 0.05$.

Results:-
I-Examine community health beliefs regarding diabetes and their perceptions related to it:
1-Demographics of the studied subjects:
The socio-demographic characteristics are shown in table (1)

Table 1: socio-demographic characteristics

	Frequency	Percentage (%)
Age (Years)		
Mean age: 28,82		
Gender		
Female	298	65,8
Male	155	34,2
Nationality		
Saudi	395	87,6
Non Saudi	56	12,4
Educational level		
Primary	6	1,3
Middle	15	3,3
Secondary	139	31,0
University	278	62,1
Master	6	1,3
PH.D.	4	0,9
Marital status		
Not married	233	51,5
Married	219	48,5
Income (RS)		
<3000	183	42,5
3000-5000	52	12,1
5000-7000	38	8,8
7000-10000	65	15,1
>10 000	93	21,6
Employment status		
Unemployed	277	61,7
Employed	172	38,3

By looking at table (1), related to the distribution of respondents according to demographic factors:
➢ The mean age of population was: 28,82 years.
➢ With respect to gender, a majority of the subjects (298)(65,8%) were Female.
➢ -395 (87,6%) subjects had Saudi nationality.
➢ We see that (278) of the respondents have a university degree with a percentage of 62,1%.
➢ We see that (219) of the respondents are married with percentage of 48,5%.
➢ We see that (183) of the respondents have an income (<3000 RS) with percentage of 42,5%.
➢ We see that (277) of the respondents are unemployed with percentage of 61,7%.

2-Knowledge regarding the diagnosis of diabetes

Table 2: Do you suffer from diabetes?

Do you suffer from diabetes?		Frequency	Percent (%)
	No	360	79,3
	I dont know	59	13,0
	Yes	35	7,7
	Total	454	100,0

Out of 454 subjects, 360 (79,3%) subjects reported not being affected with diabetes, 13% did not knew if they are affected or not and 35 (7,7%) respondents reported that they suffer from diabetes, as it is shown in the figure below:
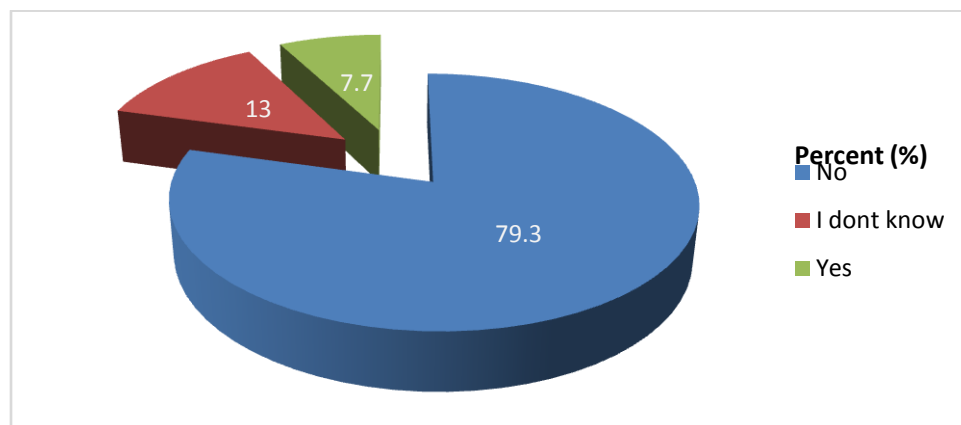
Figure 1: Do you suffer from diabetes?

3- **Community health beliefs regarding diabetes and their perceptions related to it:**

Table 3: Responses to questions on beliefs regarding diabetes

(Green: correct answer)

	No	Yes	Don't Know
Do you suffer from diabetes?	**360 (79,3%)**	**35 (7,7%)**	**59 (13,0%)**
Q1: Is there a history of diabetes illness in your family?	**291 (64,0%)**	**62 (13,6%)**	**102 (22,4%)**
Q2: you have or ever had any of the chronic diseases?	**246 (54,1%)**	**183 (40,2%)**	**26 (5,7%)**
Q3: Do you think that diabetes could be prevented?	**59 (13,0%)**	**228 (50,2%)**	**167 (36,8%)**
Q4: Do you think that heredity play a role in having diabetes?	**55 (12,1%)**	**273 (60,0%)**	**127 (27,9%)**
Q5: Do you think that psychological pressure is one of the diabetes factors?	**75 (16,5%)**	**217 (47,7%)**	**163 (35,8%)**
Q6: Do you think that diabetes increases the risk of heart disease?	**123 (27,1%)**	**65 (14,3%)**	**266 (58,6%)**
Q7: diabetes may affect humans at any age category?	**32 (7,0%)**	**250**	**172**

			(55,1%)	(37,9%)
Q8: If you have diabetes, do you feel socially ashamed by being affected?	**161 (36,3%)**	**101 (22,8%)**	**181 (40,9%)**
Q9: Do you think that diabetes can be cured?	**47 (10,4%)**	**327 (72,0%)**	**80 (17,6%)**
Q10: Do you think that diabetes can leads to death?	**227 (49,9%)**	**88 (19,3%)**	**140 (30,8%)**

-Most of the respondents 228 (50,2%) answered that diabetes could be prevented.

➤ 273 (60%) of the patients were aware that diabetes was a genetically determined disease and 217 (47,7%) thought that psychological pressure is one of diabetes factors.

➤ Only 65 (14,3%) subjects knew that diabetes increases the risk of heart disease.

➤ Most of the subjects 250 (55,1%) knew that diabetes may begin at any age.

➤ The majority of respondents 181 (40,9%) did not know if they will be ashamed or not, if they have diabetes.

➤ The majority of respondents 327 (72%) think that diabetes can be cured and only 10,4% of the subjects knew the fact that the disease is not curable.

➤ The results of the study suggested that 227 (49,9%) subjects were aware of the fact that diabetes cannot cause death.
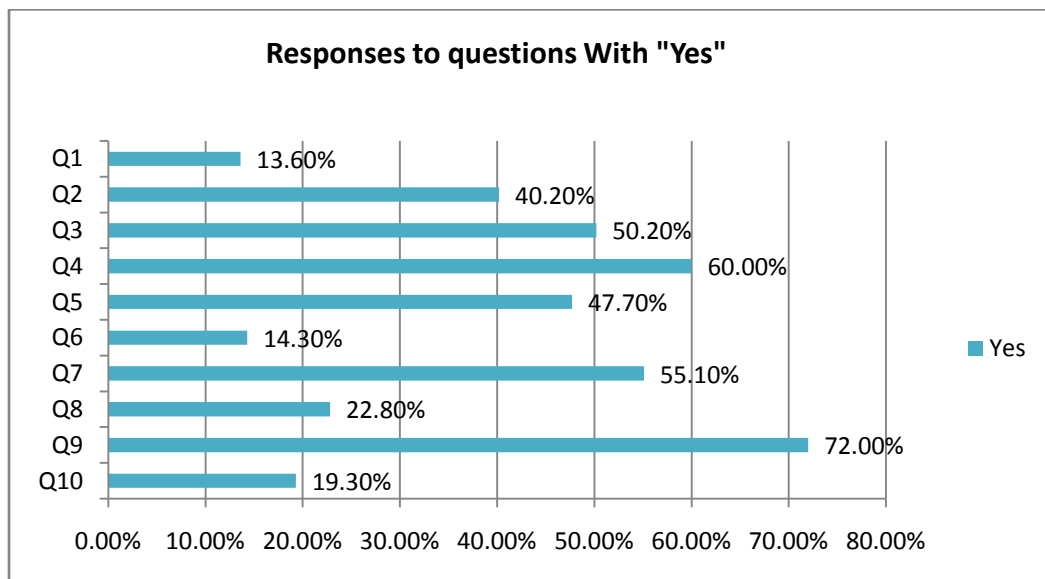
Figure 2: Responses to questions With "Yes"

II-Evaluation of the role of demographic factors in shaping beliefs about diabetes
Level of awareness

Table 4: Respondents' awareness evaluation for diabetes

Level of awareness		Frequency	Percent (%)
	0-2 : Weak	153	34,8
	3-5 : Average	260	59,1
	6-8 : Good	27	6,1
	Total	440	100,0

Table 4 shows that overall level of awareness on diabetes among the study participants showed that out of 440 subjects, 153 (34,8%) subjects had weak knowledge about the disease, 260 (59,1%) subjects had average level of knowledge whereas only 27 (6,1%) subjects had a good knowledge regarding diabetes(Figure 3).
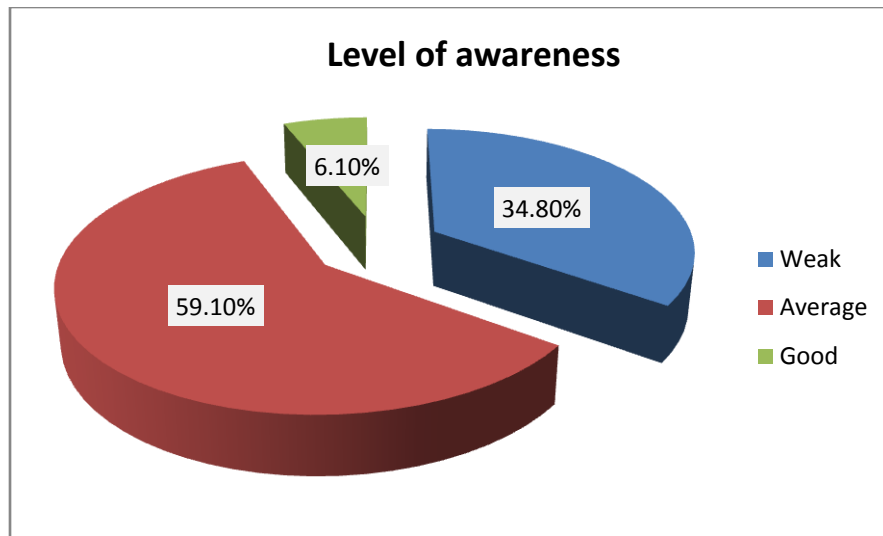
Figure 3: Level of awareness

Association of the subjects' knowledge with socio-demographic variables

1-Ag

Descriptives								
Age								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
0-2 : Weak	128	28,23	10,243	,905	26,44	30,02	15	65
3-5 : Average	220	28,71	11,080	,747	27,24	30,18	8	71
6-8 : Good	24	28,67	11,239	2,294	23,92	33,41	15	60
Total	372	28,54	10,783	,559	27,44	29,64	8	71

ANOVA					
Age					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	19,250	2	9,625	,082	,921
Within Groups	43117,145	369	116,849		
Total	43136,395	371			

2-Gender

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13,269[a]	2	,001
Likelihood Ratio	13,066	2	,001
Linear-by-Linear Association	11,568	1	,001
N of Valid Cases	440		
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 9,14.			

3-Nationality

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	,873[a]	2	,646
Likelihood Ratio	,977	2	,614
Linear-by-Linear Association	,620	1	,431
N of Valid Cases	438		
a. 1 cells (16,7%) have expected count less than 5. The minimum expected count is 3,45.			

4-Educational level

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20,279[a]	10	,027
Likelihood Ratio	24,811	10	,006
Linear-by-Linear Association	2,759	1	,097
N of Valid Cases	434		
a. 11 cells (61,1%) have expected count less than 5. The minimum expected count is ,24.			

5-Marital status

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1,161[a]	2	,560
Likelihood Ratio	1,162	2	,559
Linear-by-Linear Association	,423	1	,516
N of Valid Cases	438		
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 12,82.			

6-Income

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5,251[a]	8	,730
Likelihood Ratio	5,752	8	,675
Linear-by-Linear Association	,355	1	,551
N of Valid Cases	419		
a. 3 cells (20,0%) have expected count less than 5. The minimum expected count is 2,45.			

7-Employment status

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	,853[a]	2	,653
Likelihood Ratio	,881	2	,644
Linear-by-Linear Association	,198	1	,656
N of Valid Cases	435		
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 10,24.			

There is a statistical significant association between gender, educational level and the level of awareness about diabetes, respectively ($p=0,01 < 0,05$) and ($p=0,027 < 0,05$).

III-Assessment of possible associations between demographic characteristics with the preventive behavior of interest.
Psychological pressure is one of the diabetes factors, which is reported in the fifth question; that is why it is important to avoid stress as prevention of the disease.

Table 5: Do you think that psychological pressure is one of the diabetes factors?

Level of knowledge		Frequency	Percent (%)
	Poor knowledge	238	52,3
	Good knowledge	217	47,7
	Total	455	100,0

238 (52,3%) of the respondents have a poor knowledge about psychological pressure as a factor of diabeteswhile 47,7% of the subjects have a good knowledge.

1-Age

Group Statistics					
	5-Do you think that psychological pressure is one of the diabetesfactors?	N	Mean	Std. Deviation	Std. Error Mean
Age	Poor knowledge	196	27,47	10,073	,719
	Good knowledge	187	30,13	11,679	,854

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
									Lower / Upper
Age	Equal variances assumed	2,327	,128	-2,389	381	,017	-2,659	1,113	-4,847 / -,471
	Equal variances not assumed			-2,381	367,251	,018	-2,659	1,117	-4,855 / -,463

2-Gender

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4,128[a]	1	,042		
Continuity Correction[b]	3,735	1	,053		
Likelihood Ratio	4,145	1	,042		
Fisher's Exact Test				,048	,026
Linear-by-Linear Association	4,119	1	,042		
N of Valid Cases	453				
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 74,25.					
b. Computed only for a 2x2 table					

3-Nationality

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5,466[a]	1	,019		
Continuity Correction[b]	4,818	1	,028		
Likelihood Ratio	5,497	1	,019		
Fisher's Exact Test				,022	,014
Linear-by-Linear Association	5,454	1	,020		
N of Valid Cases	451				
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 26,82.					
b. Computed only for a 2x2 table					

4-Education level

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5,397[a]	5	,369
Likelihood Ratio	5,576	5	,350
Linear-by-Linear Association	,365	1	,546
N of Valid Cases	448		
a. 6 cells (50,0%) have expected count less than 5. The minimum expected count is 1,91.			

5-Marital status

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4,186[a]	1	,041		
Continuity Correction[b]	3,809	1	,051		
Likelihood Ratio	4,192	1	,041		
Fisher's Exact Test				,048	,025
Linear-by-Linear Association	4,177	1	,041		
N of Valid Cases	452				
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 105,14.					
b. Computed only for a 2x2 table					

6-Income

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5,331[a]	4	,255
Likelihood Ratio	5,363	4	,252
Linear-by-Linear Association	2,409	1	,121
N of Valid Cases	431		
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 18,34.			

7-Employment status

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,075[a]	1	,785		
Continuity Correction[b]	,031	1	,860		
Likelihood Ratio	,075	1	,785		
Fisher's Exact Test				,846	,430
Linear-by-Linear Association	,074	1	,785		
N of Valid Cases	449				
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 81,59.					
b. Computed only for a 2x2 table					

There is a statistical significant association between age, gender, nationality, marital status and the level of knowledge about stress as factor of diabetes, respectively ($p=0,17 < 0,05$), ($p=0,42 <0,05$), ($p=0,19 < 0,05$) and ($p=0,41 <0,05$).

Discussion:-
This study identified that:
➢ The majority of respondents have an average level of awareness toward diabetes.
➢ The majority of the studied subjects have a good knowledge about the fact that psychological stress is one of the factors of the pathology of diabetes.

➢ Our study showed that about half of respondents were not sure or were affirmative that diabetesis contagious, respectively 30,8% and 19,3%.

Recommendations:-

➢ Therapeutic management is not limited to its molecular aspect by using drugs.
➢ Improving the health of a patient goes through many other aspects as essential as drugs: education, prevention, listening, social solidarity...This change in vision has made it possible:
➢ To become aware of all the consequences of illness on the quality of life of the patient
➢ To identify the handicap and the resulting social exclusion
➢ To consider that psychological suffering is as important to take In charge as physical suffering, Indeed, the purpose of treatments is not only to eliminate the symptoms but, more generally, to improve the quality of life , to return to the patient all his freedom in his relations with himself and with others .
➢ Patients with diabetes need to improve their knowledge of the disease and self-care methods to avoid exacerbation of disease.
➢ The disease requires systematic treatment and appropriate care.
➢ Health education is a main part of the management of diabetes.

Budget

Item	Price
Transportations	*700 SR*
Paper work	*800 SR*
Software programs	*2000 SR*
Books	*1000SR*
Stationaries	*1000SR*

Work plan

Tasks in the work plan	Time period
Literature review	**2 Months**
Preparation for data collection	**1 Months**
Data collection	**3 Months**
Statistical analysis	**1 Months**
Discussion of results	**2 months**
Writing an abstract	**1 months**

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