

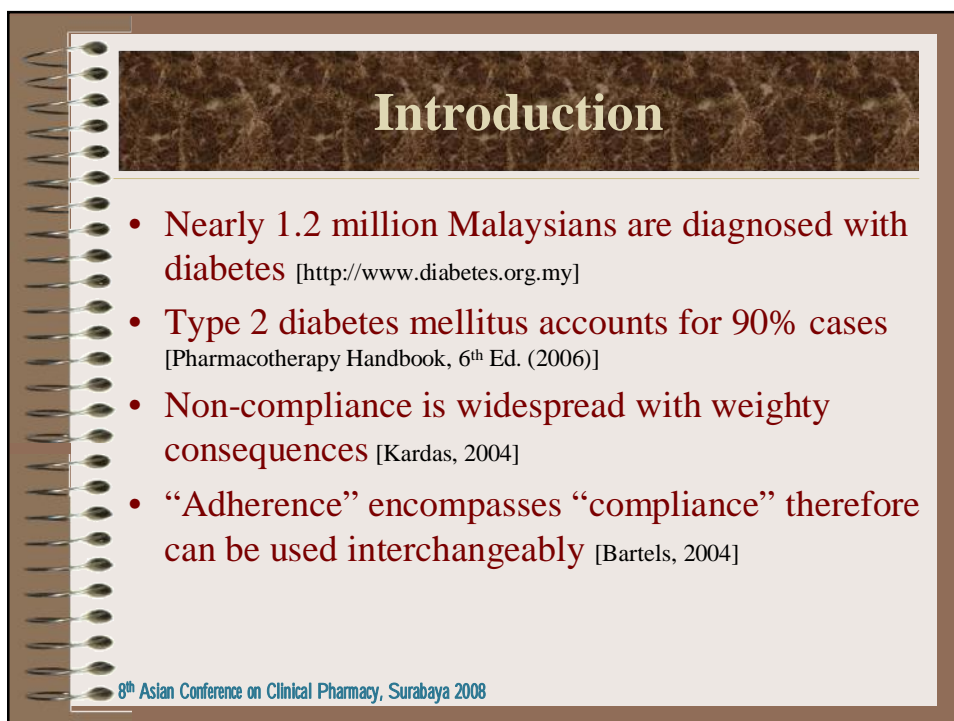


A Study on Compliance among Oral Hypoglycemic Agents (OHA) Users at a Public Hospital in Malaysia

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Introduction

- Nearly 1.2 million Malaysians are diagnosed with diabetes [<http://www.diabetes.org.my>]
- Type 2 diabetes mellitus accounts for 90% cases [Pharmacotherapy Handbook, 6th Ed. (2006)]
- Non-compliance is widespread with weighty consequences [Kardas, 2004]
- “Adherence” encompasses “compliance” therefore can be used interchangeably [Bartels, 2004]

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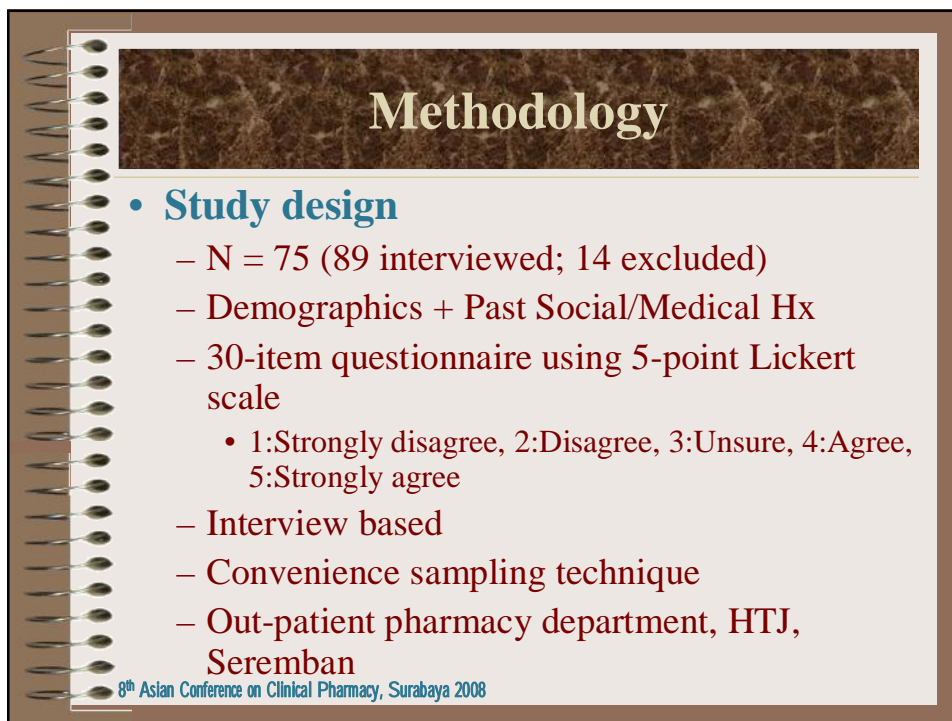
Literature Review/Research Background

- Little data is available on compliance to specifically OHA in T2DM patients [Donnan *et. al.*,2002] [Bezie *et. al.*,2006]
- Many factors have been reported to influence compliance levels [Bartels, 2004] [Kardas, 2005] [Shaw, 2006] [Bezie *et. al.*,2006]
- Overcoming these barriers will allow improvement of compliance [Shaw, 2006] [Bezie *et. al.*,2006]
- Compliance towards oral hypoglycaemic agents (OHA) in T2DM was reported to be poor to satisfactory in previous studies

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Objectives

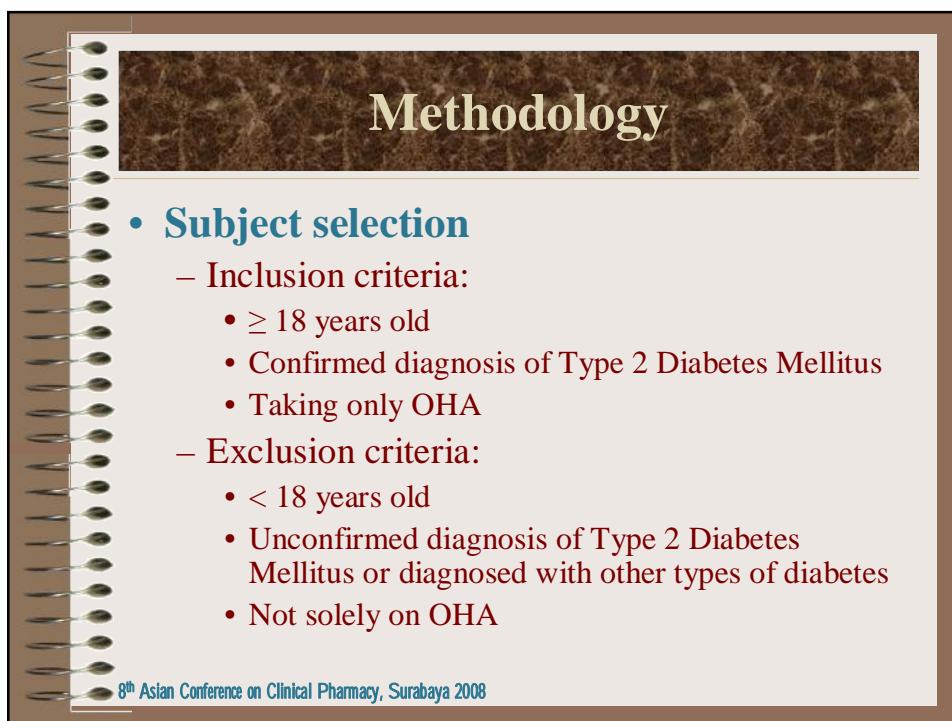
- To conduct a survey-based research and develop a questionnaire to assess compliance levels and factors affecting compliance.
- To describe the reported levels of compliance to oral hypoglycaemic agents in the management of type 2 diabetes mellitus in government hospital setting.
- To determine the factors which may affect the levels of compliance.



Methodology

- **Study design**
 - N = 75 (89 interviewed; 14 excluded)
 - Demographics + Past Social/Medical Hx
 - 30-item questionnaire using 5-point Lickert scale
 - 1:Strongly disagree, 2:Disagree, 3:Unsure, 4:Agree, 5:Strongly agree
 - Interview based
 - Convenience sampling technique
 - Out-patient pharmacy department, HTJ, Seremban

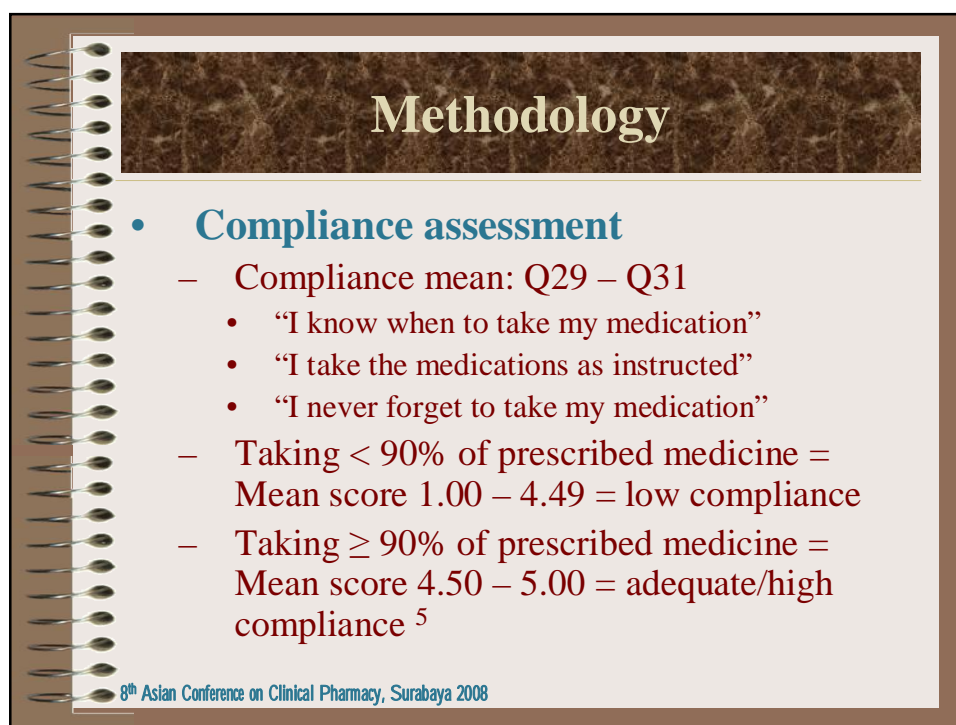
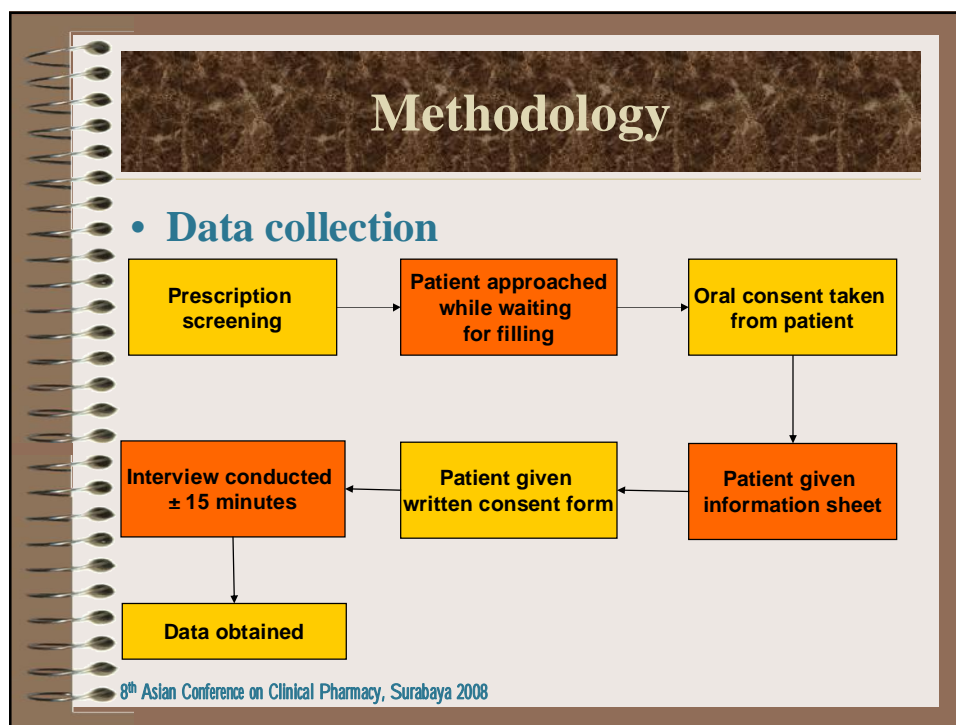
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Methodology

- **Subject selection**
 - Inclusion criteria:
 - ≥ 18 years old
 - Confirmed diagnosis of Type 2 Diabetes Mellitus
 - Taking only OHA
 - Exclusion criteria:
 - < 18 years old
 - Unconfirmed diagnosis of Type 2 Diabetes Mellitus or diagnosed with other types of diabetes
 - Not solely on OHA

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Methodology

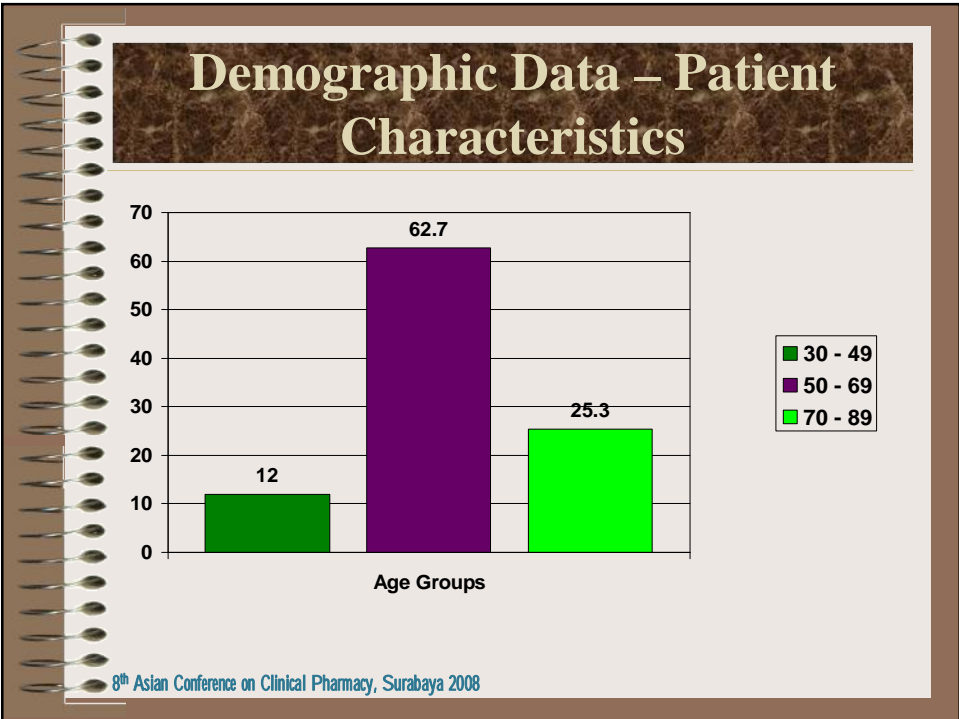
- **Grouping of questions**

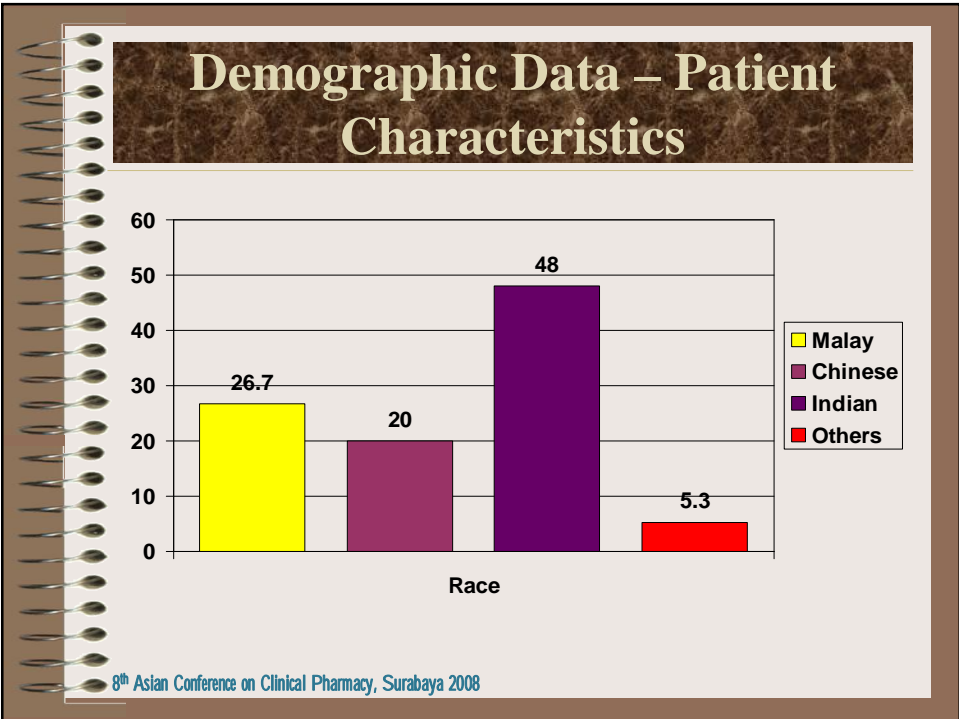
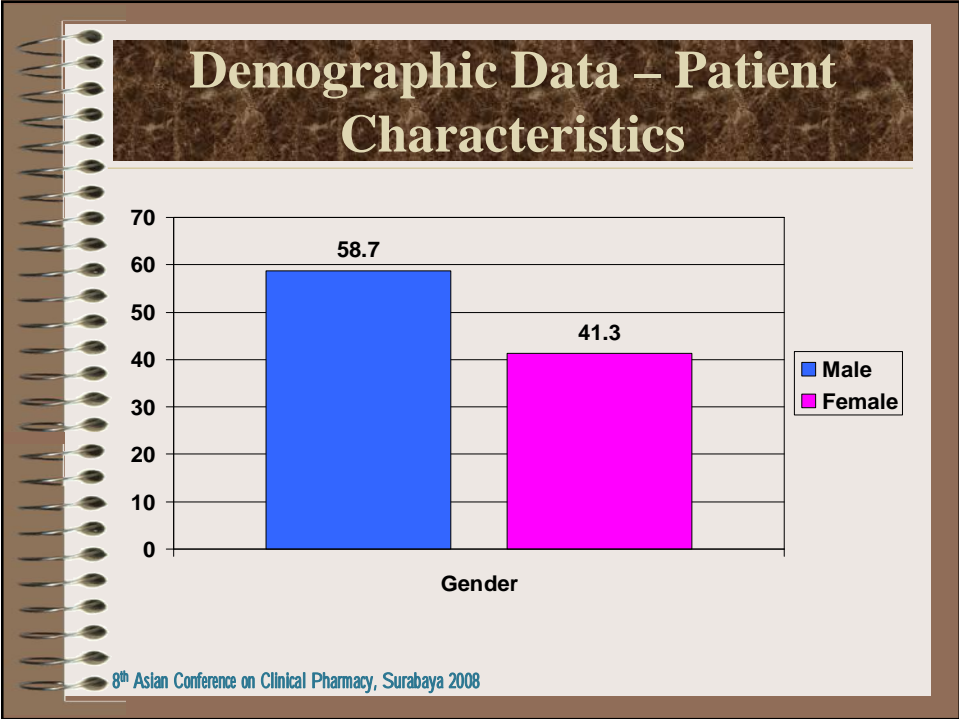
Factors (Group)	Questions
Knowledge of disease	18, 19, 21, 22
Perception towards disease	23, 24
Knowledge of medications	25, 26
Experience with medications	20, 27, 28, 32 – 38
Experience with healthcare professionals	39, 40, 41, 42
Support from family members	43, 44
Beliefs in alternative/traditional medicines	45, 46, 47

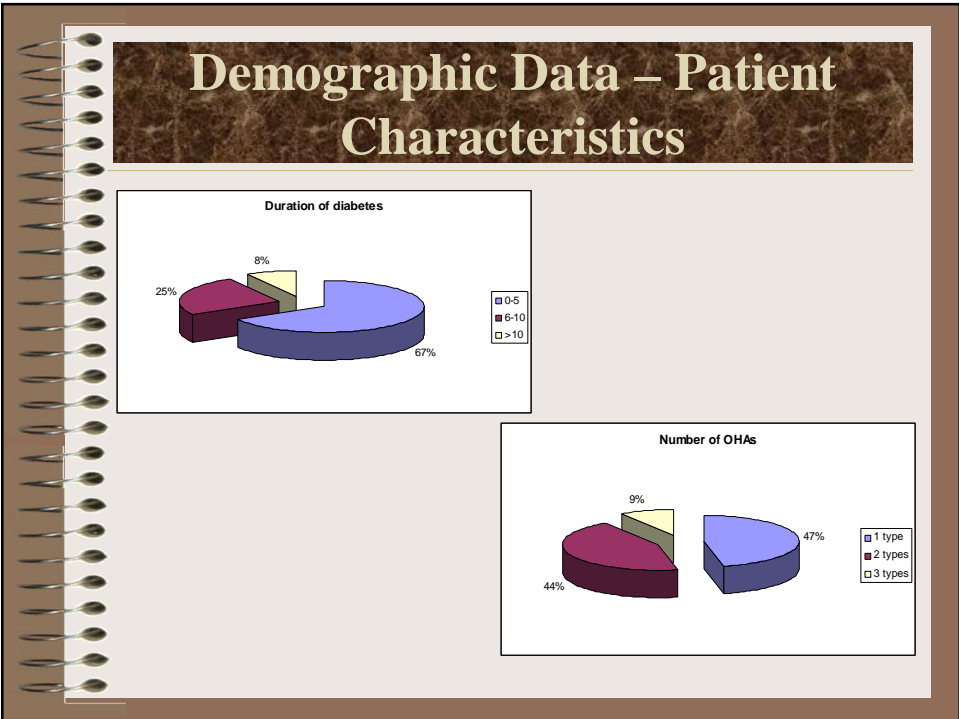
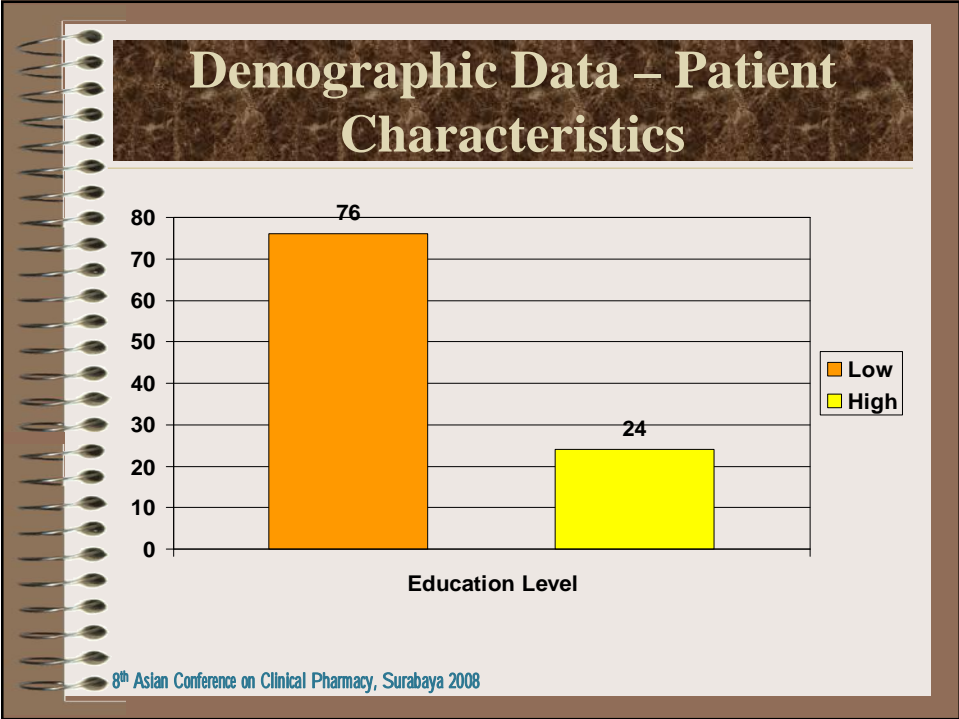
Methodology

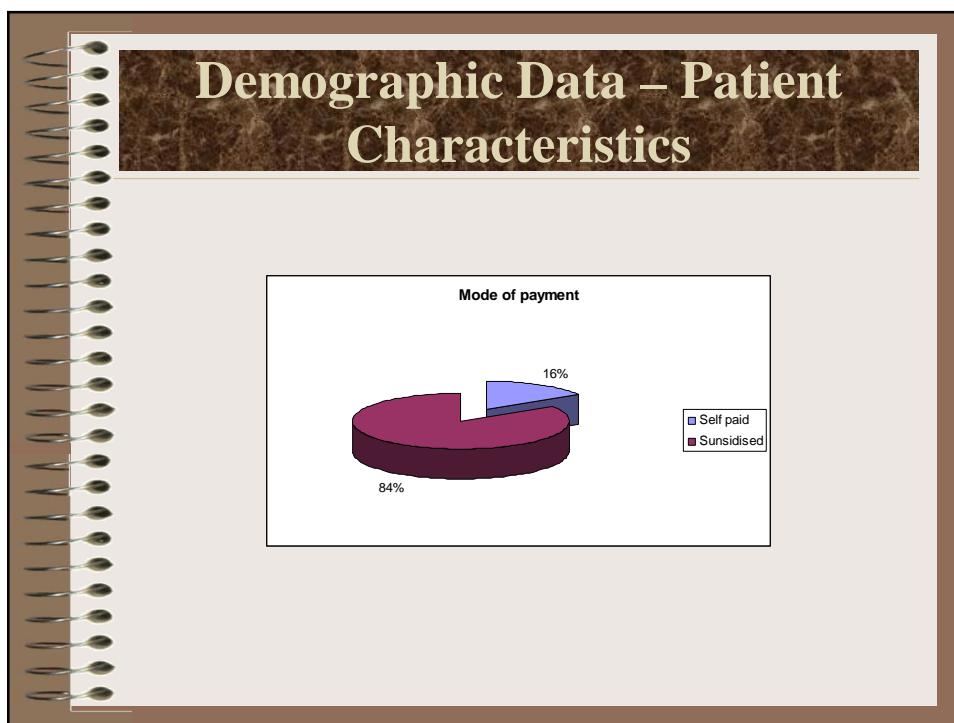
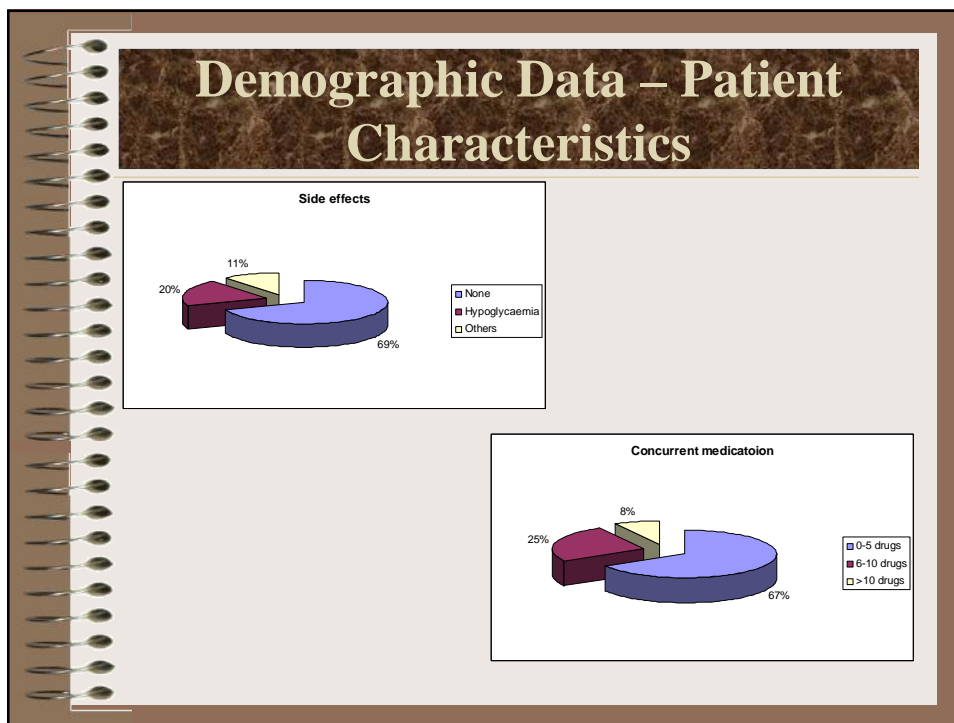
- **Statistical methods**
 - Done with SPSS ver.12.0 for Windows®
 - T-test for independent samples to evaluate difference in mean between two groups
 - One-way ANOVA to evaluate difference in mean for more than two groups
 - Both to determine association between compliance and demographics
 - Spearman’s Correlations test to find correlation between independent variables (factors) and dependent variable (compliance)
 - $P < 0.05$ taken to indicate statistical significance

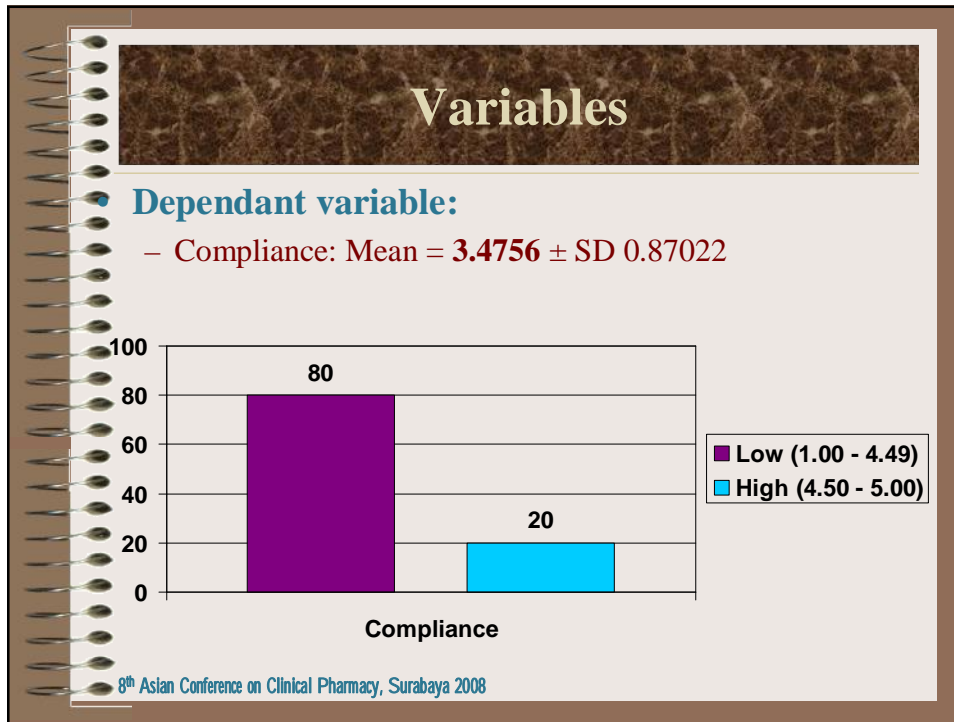
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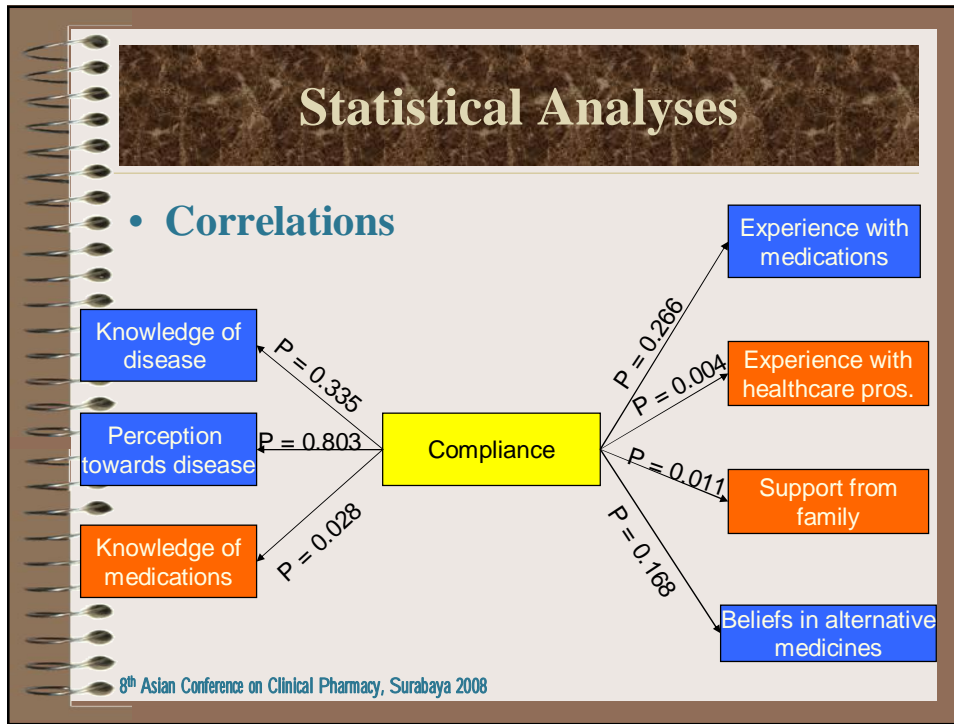


Variables

- Independent variables:**

Variables	Mean
Knowledge of disease	2.9244
Perception towards disease	3.3267
Knowledge of medications	2.9067
Experience with medications	4.3027
Experience with healthcare professionals	3.6500
Support from family	4.0467
Beliefs in alternative medicines	3.7200

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Statistical Analyses

Factor	P value	Remarks	Other studies
Age	0.574	Not strongly associated with compliance Narrow age gap – Min: 33; Max: 87	Donnan et. al., 2002
Gender	0.579	Not strongly associated with compliance Male : Female = 58.7% : 41.3%	Donnan et. al., 2002
Race	0.213	Not strongly associated with compliance M : C : I : O = 20 : 15 : 36 : 4	
Level of education	0.204	Not strongly associated with compliance Low education : High education = 76% : 24%	

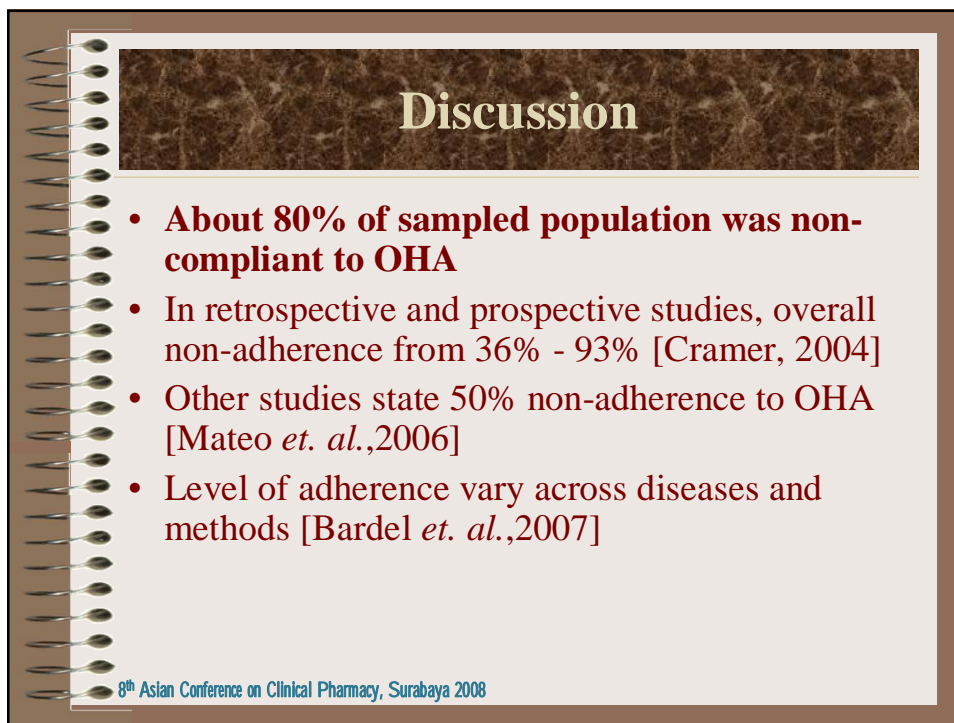
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Statistical Analyses

Duration of diabetes	0.977	Not strongly associated with compliance	
No. of OHA	0.386	Not strongly associated with compliance	Melikian <i>et. al.</i> (2002)
Side effects	0.042	Strongly associated with compliance No side effects vs. side effects = (3.3205 ± 0.7496) vs. (3.8261 ± 1.0292)	Shaw (2006) Chao <i>et. al.</i> (2007)
Concurrent medications	0.236	Not strongly associated with compliance	
Payment of medical fees	0.000	Strongly associated with compliance Self vs. subsidised = (4.4722 ± 0.7311) vs. (3.2857 ± 0.9596)	Bartels (2004)

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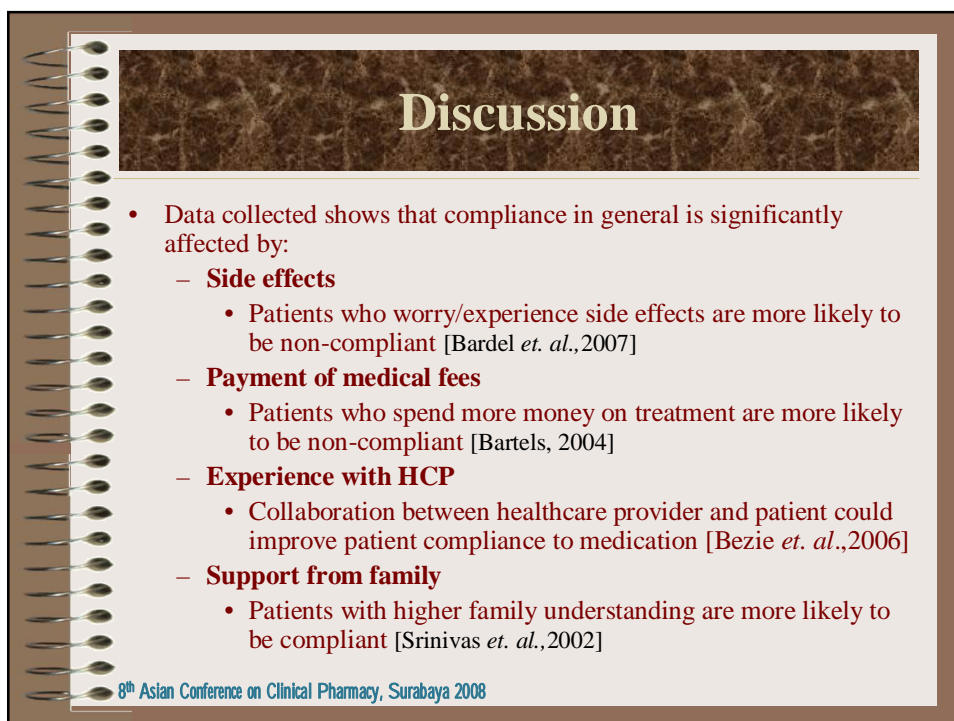
Question	Mean ±SD	% Low agreement	% High agreement	Pearson (P value)
Q18	2.680 ±1.347	65.3	34.7	0.235 (0.042)
Q19	4.293 ±1.302	78.7	21.3	-0.049 (0.677)
Q22	2.400 ±1.356	37.3	62.7	-0.004 (0.972)
Q24	3.867 ±1.201	36.0	64.0	0.122 (0.298)
Q26	3.307 ±1.498	50.7	49.3	0.177 (0.129)
Q27 + Q28	4.293 ±1.303	25.3	74.7	-0.159 (0.174)
Q32	4.027 ±1.197	30.7	69.3	0.074 (0.527)
Q35	2.947 ±1.089	64.5	35.5	0.244(0.036)
Q40	2.707 ±1.292	66.7	33.3	0.234 (0.043)
Q41	2.613 ±1.413	62.7	37.3	0.276 (0.017)



Discussion

- **About 80% of sampled population was non-compliant to OHA**
- In retrospective and prospective studies, overall non-adherence from 36% - 93% [Cramer, 2004]
- Other studies state 50% non-adherence to OHA [Mateo *et. al.*,2006]
- Level of adherence vary across diseases and methods [Bardel *et. al.*,2007]

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Discussion

- Data collected shows that compliance in general is significantly affected by:
 - **Side effects**
 - Patients who worry/experience side effects are more likely to be non-compliant [Bardel *et. al.*,2007]
 - **Payment of medical fees**
 - Patients who spend more money on treatment are more likely to be non-compliant [Bartels, 2004]
 - **Experience with HCP**
 - Collaboration between healthcare provider and patient could improve patient compliance to medication [Bezie *et. al.*,2006]
 - **Support from family**
 - Patients with higher family understanding are more likely to be compliant [Srinivas *et. al.*,2002]

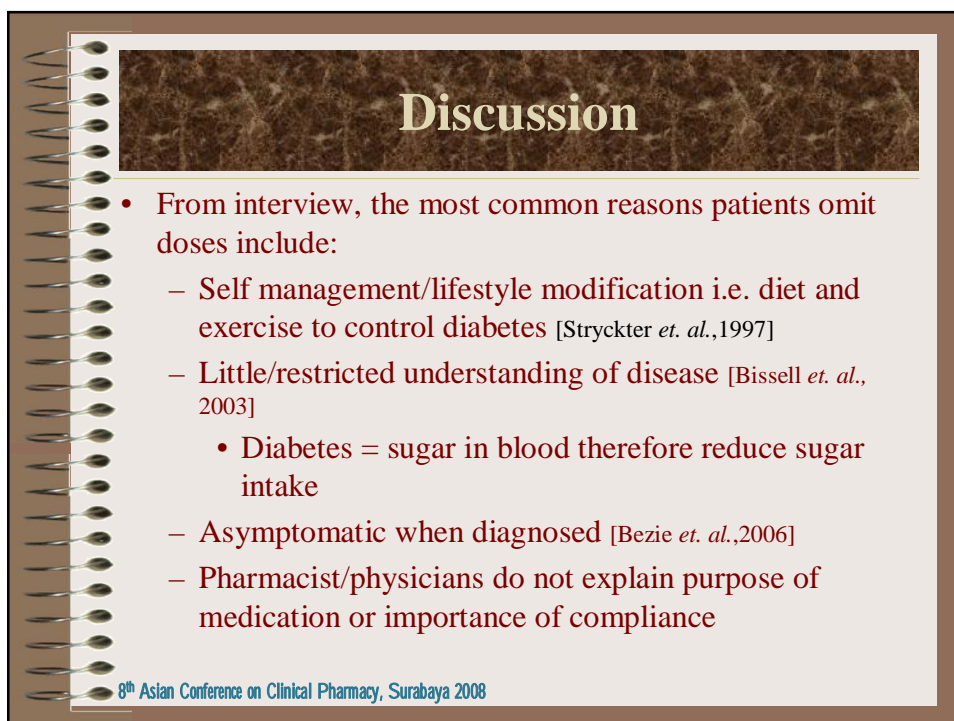
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Discussion

- Most common cause of non-compliance is being forgetful [Walker *et. al.*,2006]
 - 76% of sampled population claimed low agreement to have never forgotten to take their medications
- However, individual patients have individual reasoning to non-compliance
- Adherence to medication should be viewed from psychological, physical, social and environmental aspects

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Discussion

- From interview, the most common reasons patients omit doses include:
 - Self management/lifestyle modification i.e. diet and exercise to control diabetes [Stryckter *et. al.*,1997]
 - Little/restricted understanding of disease [Bissell *et. al.*, 2003]
 - Diabetes = sugar in blood therefore reduce sugar intake
 - Asymptomatic when diagnosed [Bezie *et. al.*,2006]
 - Pharmacist/physicians do not explain purpose of medication or importance of compliance

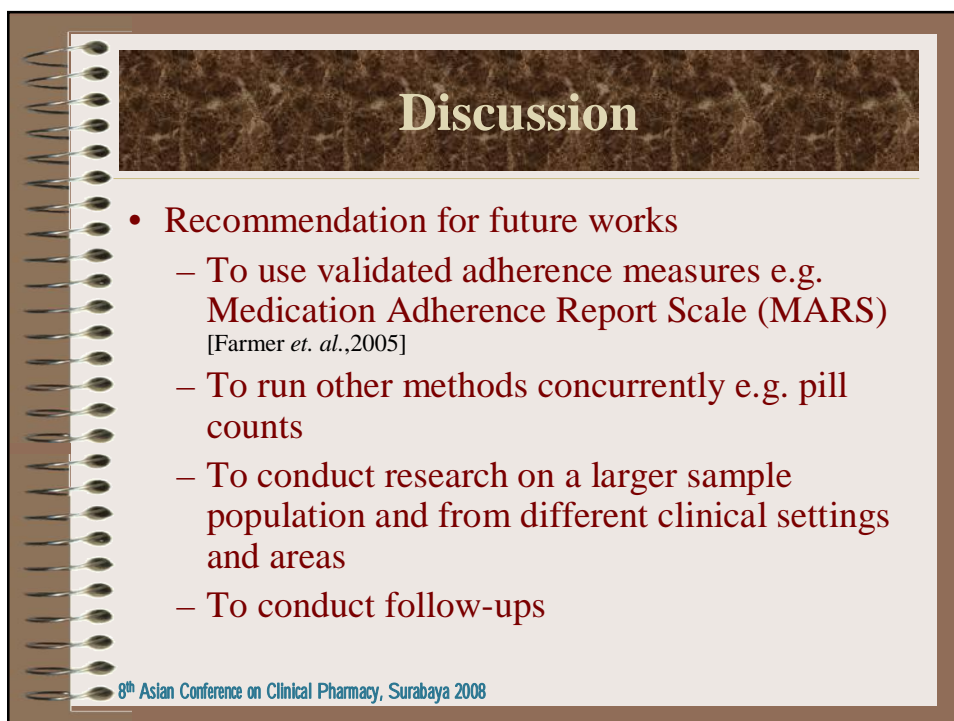
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Discussion

- Non-significant results does not mean factors do not affect compliance levels
- Interventions to be carried out to improve compliance levels
- Should be patient-centered
- Identify ways to overcome barriers
 - E.g. Forgetfulness – Operating reminder system [Lindenmeyer *et. al.*,2006]

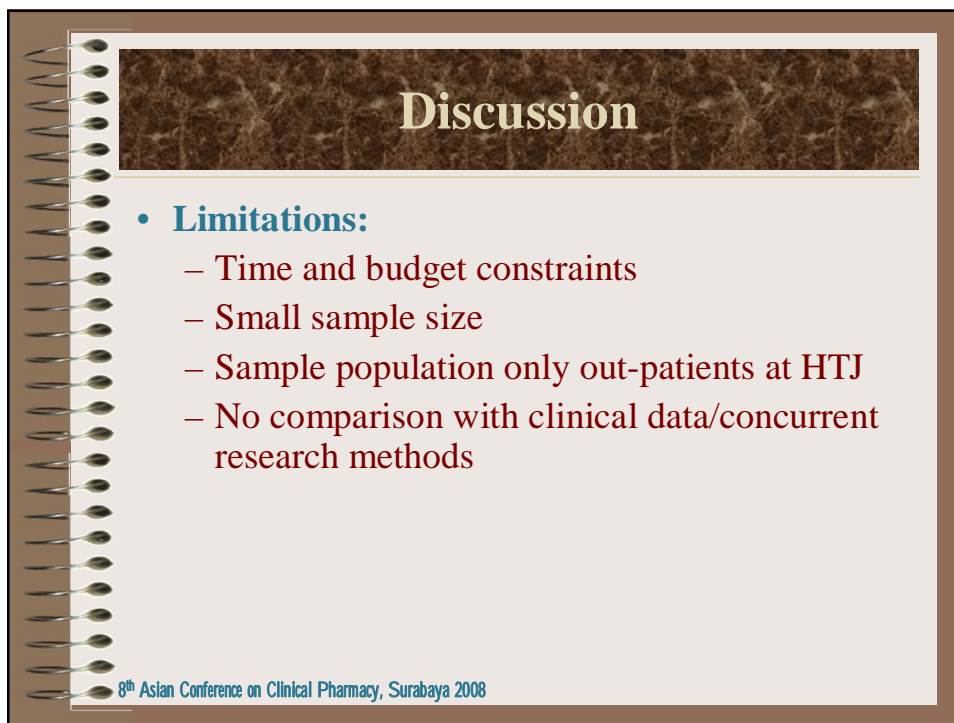
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Discussion

- Recommendation for future works
 - To use validated adherence measures e.g. Medication Adherence Report Scale (MARS) [Farmer *et. al.*,2005]
 - To run other methods concurrently e.g. pill counts
 - To conduct research on a larger sample population and from different clinical settings and areas
 - To conduct follow-ups

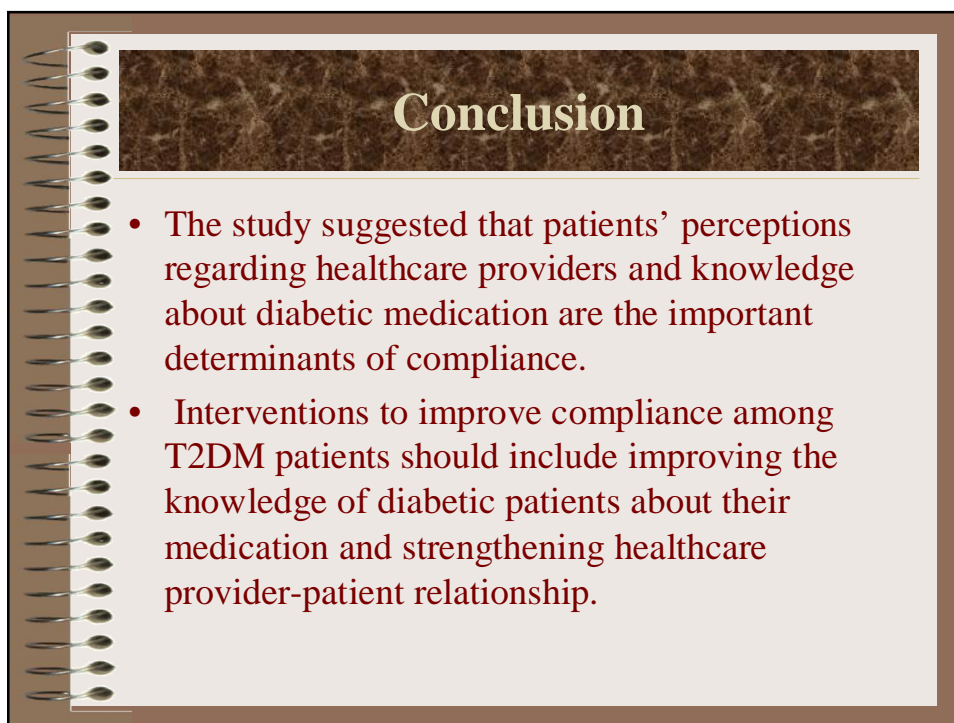
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Discussion

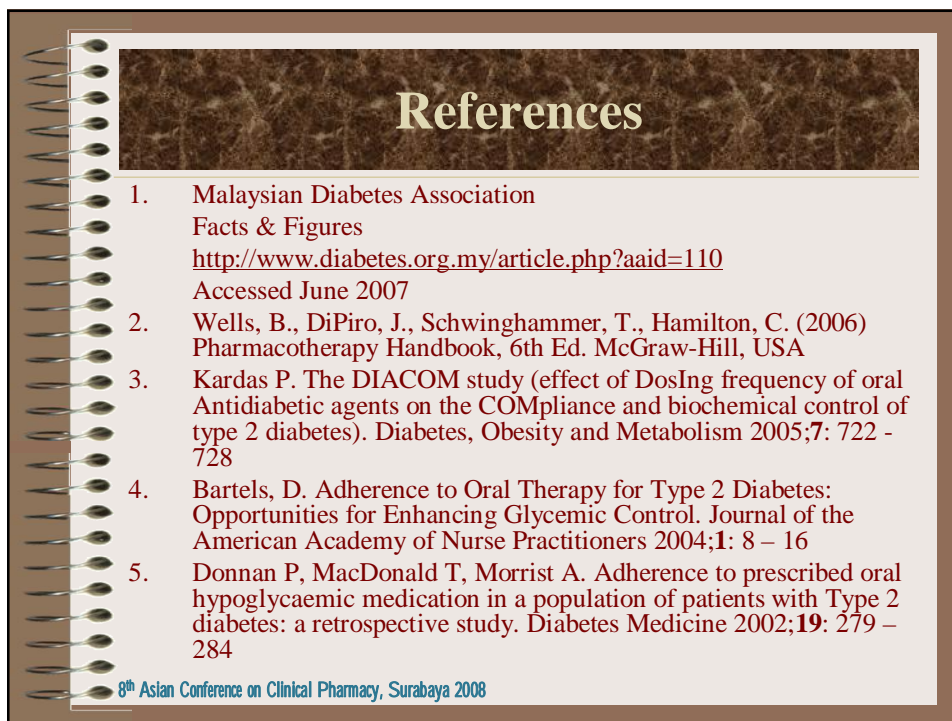
- **Limitations:**
 - Time and budget constraints
 - Small sample size
 - Sample population only out-patients at HTJ
 - No comparison with clinical data/concurrent research methods

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Conclusion

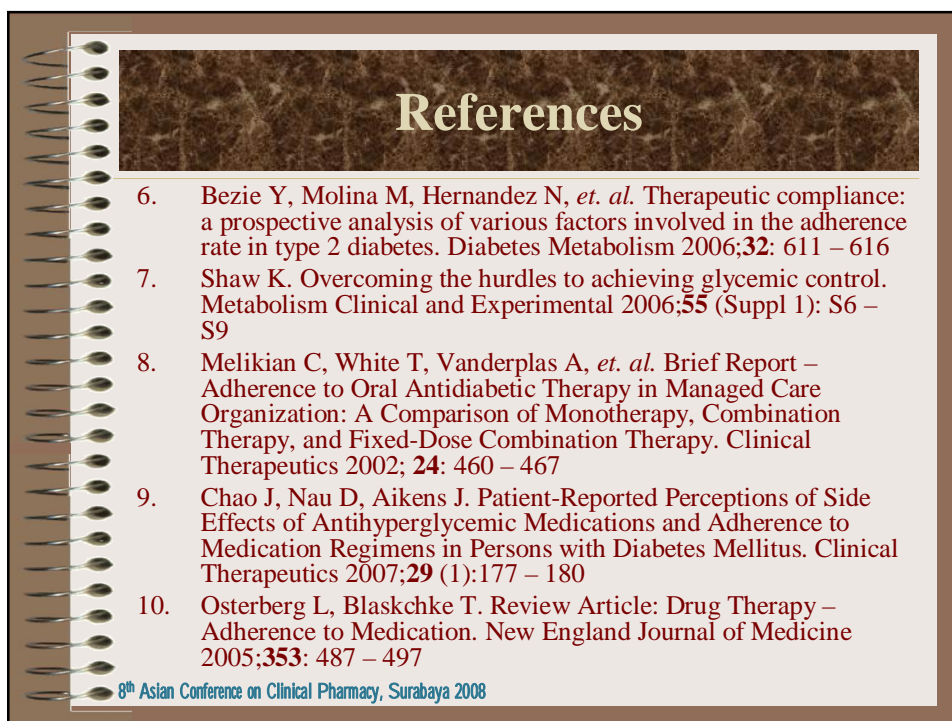
- The study suggested that patients’ perceptions regarding healthcare providers and knowledge about diabetic medication are the important determinants of compliance.
- Interventions to improve compliance among T2DM patients should include improving the knowledge of diabetic patients about their medication and strengthening healthcare provider-patient relationship.



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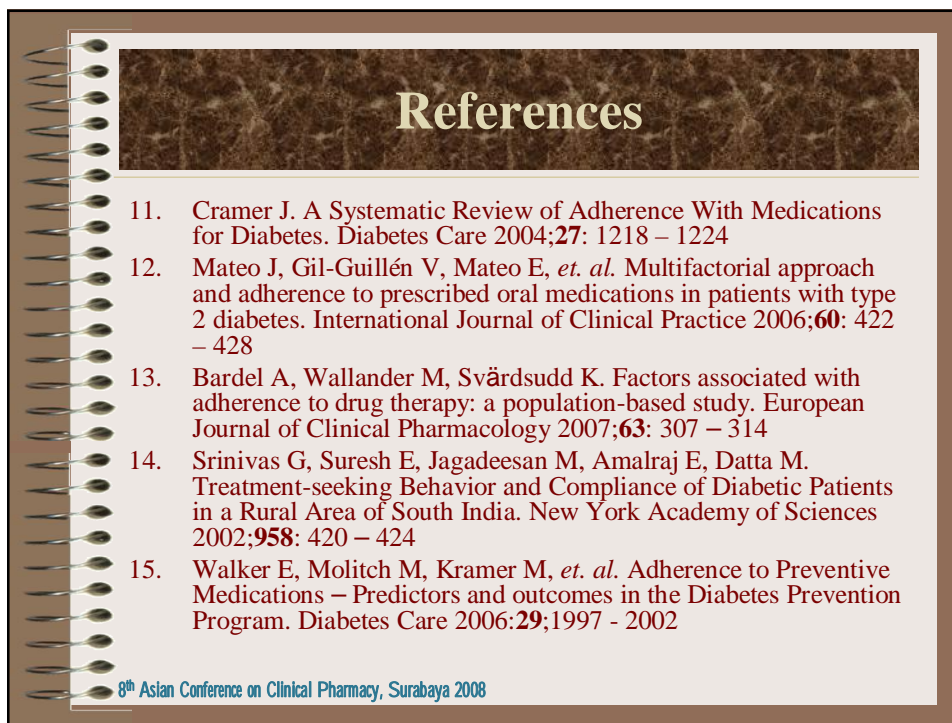
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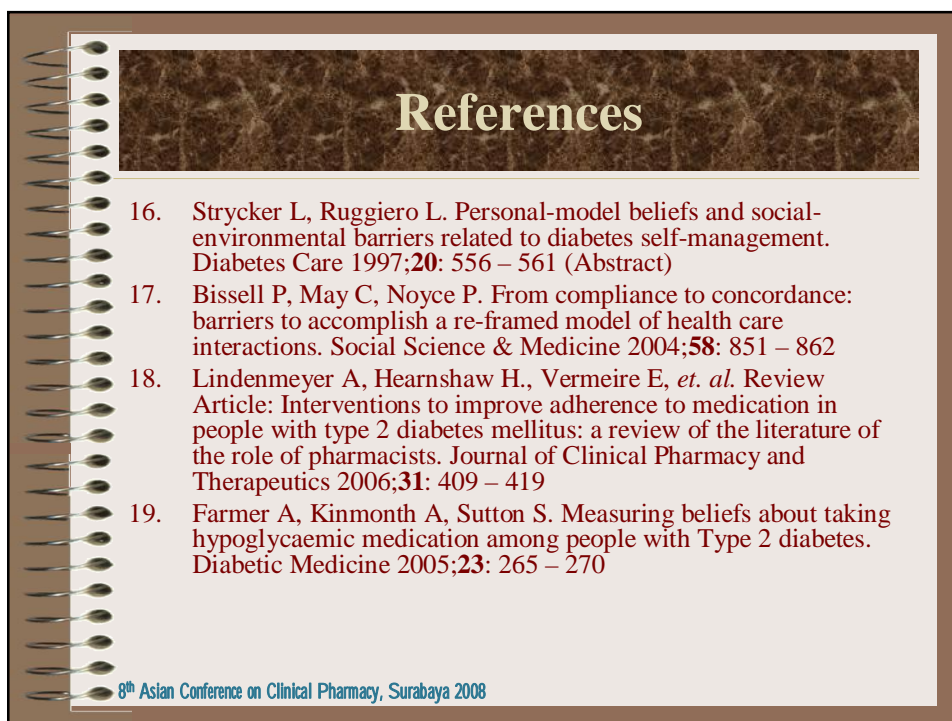
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