Medication adherence and predictive factors in patients with cardiovascular disease in Sydney, Australia

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The significance of medication adherence

Cardiovascular disease remains the major cause of death worldwide (Lozana et al., 2012).

In Australia, there were 19.077 deaths from CVD in 2016. (Australian Bureau of Statistics, 2016).

Poor adherence to cardiac medications is linked to increased morbidity, hospitalisation and mortality (National Heart Foundation of Australia, 2011; Laba et al., 2013).
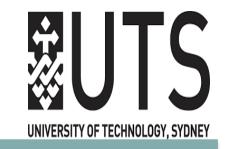
Adherence to medication presents a major challenge and non-adherence rates in Australia range from 14% to 43% (WHO, 2003; McKenzie et al., 2015).

Rationale for performing the study

o Medication adherence of people with CVD poses important behavioural health problems world-wide.

o There are few medication adherence studies for patients with CVD.

o Evidence is lacking of which factors influence adherence in patients with CVD in Australia.

o Identifying specific factors at specific points in disease progression offers potential to improve medication adherence for cardiac patients.

Research aims

✧ Research Aim

o To evaluate adherence to cardiac medications and associated factors in patients with CVD.

✧ Specific Objectives

- Identify and compare the levels of cardiac medication adherence.

- Examine the relationships between level of medication adherence and potential behavioural factors.

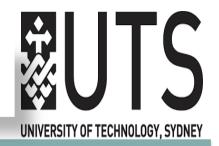- Identify predictive factors for medication adherence in patients with CVD.

Study Methods

Design

- Cross-sectional survey.

Study setting

- Tertiary referral hospital in Sydney, Australia:
  - ❖ In-patient cardiology ward,
  - ❖ Out-patient cardiac rehabilitation centre
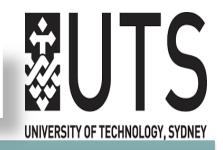
Study Methods

- ❑ **Recruitment**
  - – Under the supervision of the clinical nurse consultant for cardiac rehabilitation and the clinical pharmacist for the cardiac ward.
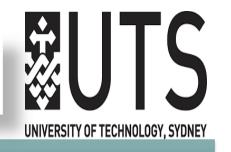 - – Eligible consecutive cohorts of patients who expressed interest in the project were referred to the researcher.

- ❑ **Data collection methods**
  - **Socio-Demographic and Health Data Sheet**.
  - **Assessment tools included:**
  - ➢ Medication Adherence Questionnaire (MAQ)
  - ➢ Adherence to Refills and Medications Scale (ARMS).
  - ➢ Belief about Medicine Questionnaire (BMQ).
  - ➢ Medication Adherence Self-Efficacy Scale-Revised (MASES-R).
  - ➢ Medication Specific Social Support (MSSS).

Study Methods

❑ **<u>Sample size determination:</u>**

– Level of power (β) = 80%, α= 0.05 (two sided) (Ma, et al., 2014)

* Around 125 patients/month were admitted to the cardiac ward

* 18% uptake of referrals to the cardiac rehabilitation centre

* ≈ 50% of eligible patients might participate.

* 120 respondents for valid statistical analysis.

Study Methods

Sample approach: Consecutive sampling

Inclusion criteria	Exclusion criteria
All cardiac rehabilitation and cardiac ward patients who: o 18 years of age or older. o diagnosed with cardiac disease. o currently taking at least one cardio-protective medication. o having primary responsibility for taking their own medications. o Read, speak and understand English	**All cardiac rehabilitation and cardiac ward patients who:** o blind, deaf or unable to consent. o Patients newly diagnosed with cardiac disease and without a history of taking cardiac medication.

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Findings

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✧ **Characteristics of participants**

o n=120 patients (60% response rate):
   n = 89 cardiac ward; n = 31 cardiac rehabilitation.
   mean (SD) age 66.6 (SD=11.9); 69.9 (11.5) years, respectively.

o Cardiac rehabilitation participants were more often:

❖ Married, in a relationship/ co-habiting ($P < 0.03$).
❖ Better education ($P < 0.01$).
❖ Less likely to remember the names of all their cardiac medications ($P < 0.04$).
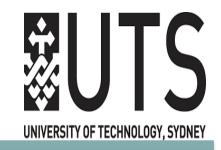
Findings Cont.....!

❖Medication Adherence

o Using the Medication Adherence Questionnaire (MAQ) (Morisky, Green, & Levine, 1986).

o Overall 37.5% of both cardiac groups had medium/low cardiac medication adherence.

o Cardiac rehabilitation participants reported lower levels of adherence to their cardiac medications ($p = 0.001$).

Findings

❖ **Medication Adherence**

Level of medication. Adherence (MAQ)	Total n (%) n=120	Cardiac Rehab. n (%) n= 31	Cardiac Ward n (%) n= 89	Chi-Square Test	df	P-value
High	75 (62.5%)	18 (58.1%)	57 (64.0%)			
				28	1	0.001*
Medium/Low	45 (37.5%)	13 (41.9%)	32 (36.0%)			

✧**Medication Adherence Factors**

❖ Both patients' group responses demonstrated factors significantly associated with participants' level of medication adherence (MAQ)

❖ Moderate-strong positive correlations which explained 45%, 15% and 11% of patients' adherence to cardiac medications:

○ The ability to refill medications (self-management+ refill)

○ Medication adherence self-efficacy (confidence)

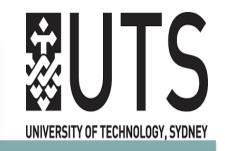○ Beliefs about medications (necessity, concern, overuse, harm)

Findings Cont.....!

✧ Medication Adherence Factors

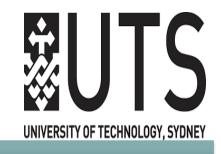| Predictors	1	2	3	4	5
1. ARMS	-				
2. MASESR	.516**	-			
3. BaMQ	.425**	0.385**	-		
4. MSSS	-.044	-.203*	-.037	-	
5. MAQ	.676**	.392**	.335**	-.036	1

Cont.....!

◇ **Predictors of cardiac medication adherence**
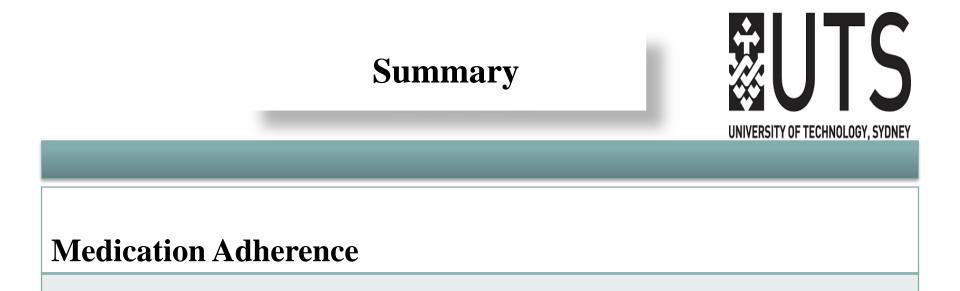
◇ Patient responses demonstrated two significant predictor of cardiac medication adherence:

○ Patients with a greater ability to refill cardiac medications were more likely to report better medication adherence $p < 0.001$.

○ Patients with a greater belief about the necessity, less concern overuse and harm to take cardiac medications were more likely to report better medication adherence too $p = 0.041$

Findings

◇ **Predictors of cardiac medication adherence**

Predictors	Odds ratio B	Standard Error S.E.	Wald	Cox and Snell R square	df	Sig.	Odds ratio Exp(B)	95% C.I. EXP(B) Lower	Upper
ARMS	-.771	.170	20.520	.396	1	0.001*	.463	.332	.646
BaMQ	.133	.065	4.178		1	0.041*	1.142	1.005	1.298
Constant	30.220	6.990	18.689		1	.000			

Summary

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Medication Adherence
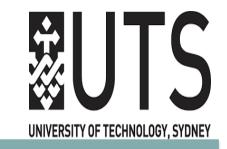
1. 1/3 of both groups had medium/low medication adherence.

2. Cardiac rehab. patients reported lower levels of cardiac medications adherence.
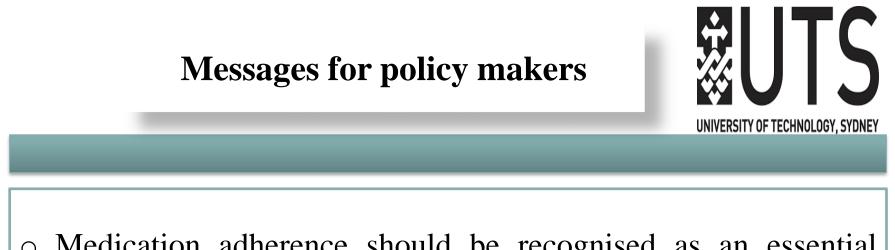
Summary

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Factors Influencing Cardiac Medication Adherence

1. The ability to refill cardiac medications
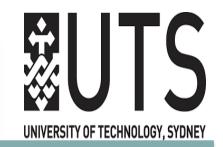2. Medication adherence self-efficacy
3. Beliefs about medications

Factors Predicting Cardiac Medication Adherence

1. The ability to refill cardiac medications
2. Beliefs about the necessity, concern, general harm and overuse of cardiac medications.

Messages for policy makers

o Medication adherence should be recognised as an essential focus throughout the cardiac patient journey, with measures established to support this as a priority.

o Prioritise medication adherence education and counselling for cardiac patients in all hospital settings.

o Reinforce the importance of medication adherence during cardiac rehabilitation and in routine follow up visits.

o Establish medication adherence intervention plans for patients in cardiac care settings.

Messages for policy makers

o Greater attention to the role of cardiac nurses in assessing patients' cardiac medication self-management.

o Clinical nurses and pharmacists need to build trust with their cardiac patients in order to be able to address belief-related adherence barriers.

o An effective care provider-patient relationship may be important component to build an encouraging environment to achieve treatment goals.

o Tailoring educational interventions to target patients' beliefs about cardiac medication may be an effective approach to improve patients' beliefs.

Conclusion

- Strategies are urgently required to improve the unacceptable levels of medication adherence.

- Strategies should be tailored to factors that deter timely medication refill and which are linked to more negative beliefs about medication adherence.

- Cardiac nurses and pharmacists can enhance their roles in assessing and improving patients' ARMS and their beliefs about cardiac medications which, in turn, should improve patients' medication adherence and outcomes.

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Questions