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2023 Symposium

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Using a systems thinking approach to explore the complex relationships between schizophrenia and premature mortality

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Equally Well 2023 Symposium

Acknowledgement of Country

The University of Queensland (UQ) acknowledges the Traditional Owners and their custodianship of the lands on which we meet.

We pay our respects to their Ancestors and their descendants, who continue cultural and spiritual connections to Country.

We recognise their valuable contributions to Australian and global society.

The Brisbane River pattern from *A Guidance Through Time* by Casey Coolwell and Kyra Mancktelow.

Background

- People with schizophrenia have a decreased life expectancy of 13 to 15 years (Hjorthøj *et al.,* 2017)

  – Comorbid physical diseases

- Mortality gap has persisted over time

- Limitations of linear thinking

Table 1 Multilevel model of risk for excess mortality in persons with severe mental disorders (SMD)

Individual factors	Health systems	Social determinants of health
Disorder-specific	**Leadership**	**Public policies**
• Severity of disorder	• Absence of relevant policies and guidelines	• Discriminating policies
• Family history		• Low financial protection and limited coverage in health packages
• Symptoms/pathophysiology	**Financing**	
• Early age of onset	• Low investment in quality care	**Socio-economic position**
• Recency of diagnosis		• Unemployment
	Information	• Homelessness
Behaviour-specific	• Limited health information systems	• Low health literacy
• Tobacco use		
• Poor diet	**Service delivery**	**Culture and societal values**
• Inadequate physical activity	• Verticalization and fragmentation of health services	• Stigma and discrimination in society
• Sexual and other risk behaviours	• Lack of care coordination and management	• Negative perceptions about persons with SMD
• Substance use (alcohol and drugs)	• Limited access to services	
• Low motivation (e.g., treatment seeking, adherence)		**Environmental vulnerabilities**
	Human resources	• Infections, malnutrition
	• Poor quality service provision	• Access to means of suicide
	• Negative beliefs/attitudes of workforce	• Impoverished or unsafe neighbourhoods
	• Poor communication	
		Social support
	Medications	• Limited family, social and community resources
	• Antipsychotic medications (no treatment, polypharmacy, higher than recommended dosages)	

Liu, N. H. *et al.* (2017). Excess mortality in persons with severe mental disorders: a multilevel intervention framework and priorities for clinical practice, policy and research agendas. *World Psychiatry*, 16(1), 30-40. doi:10.1002/wps.20384
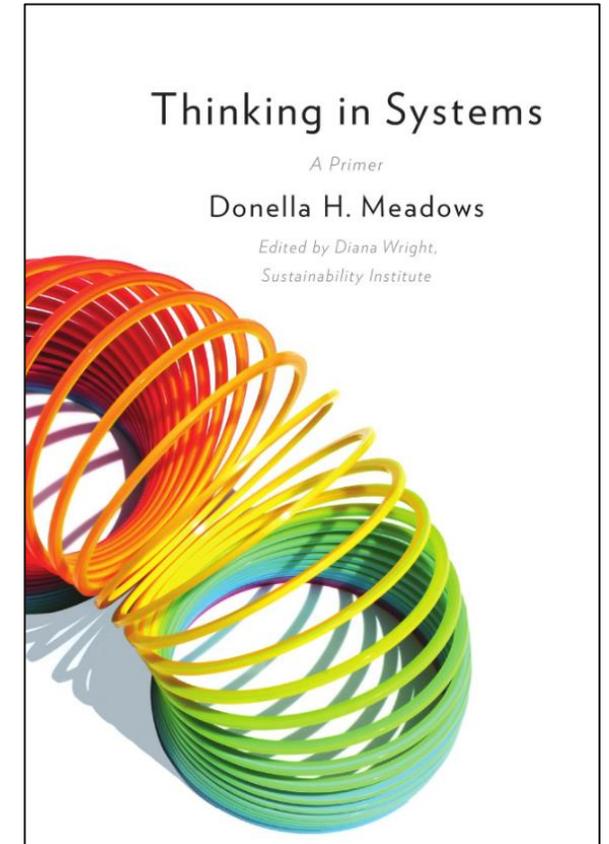
Systems thinking

More than the sum of its parts

- A system is a collection of parts that interact with one another to function as a whole
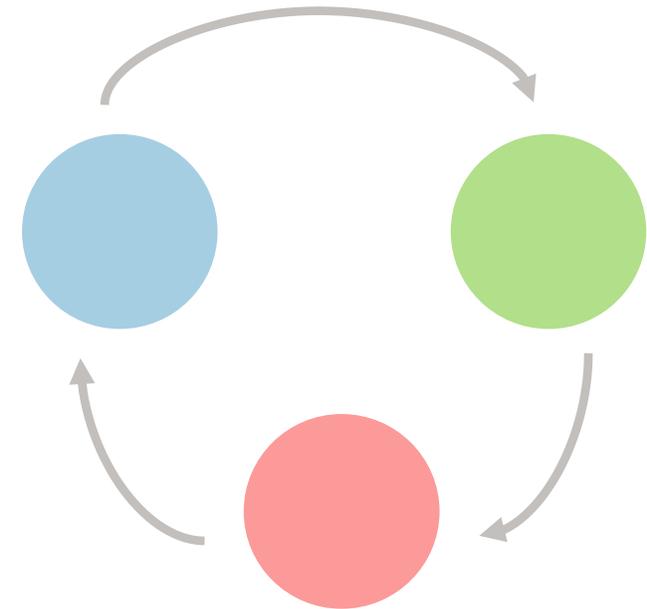
Thinking in systems

- Understanding how the behaviour of a system arises from the interactions of its parts over time

- Big picture, identify root causes

- System structure is the source of system behavior

- Premature mortality in people with schizophrenia

    • Epidemiological framing

    • Why is the mortality gap not improving?

    >> Conceptualise this issue as a complex system

Thinking in Systems

A Primer

Donella H. Meadows

*Edited by Diana Wright,
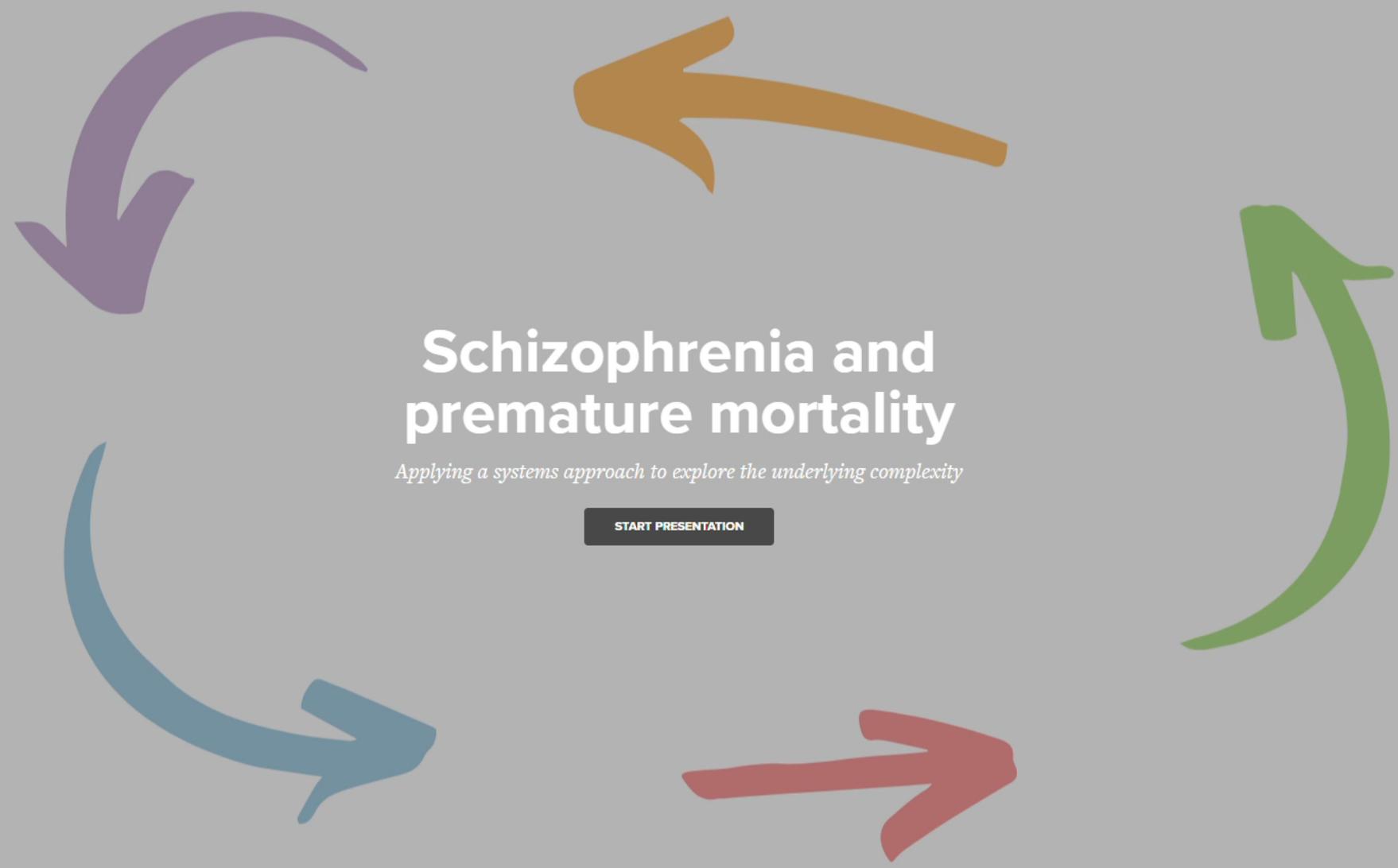Sustainability Institute*

Causal loop modelling

- What? A causal loop diagram (CLD) is a systems thinking tool for visualising the causal relationships among a set of variables operating in a system

  • Identify feedback loops

  - How? Primary and secondary data; group model building and researcher created

  - Why? Conceptual framework; make assumptions explicit, interpret the current evidence base, identify intervention points, highlight research gaps

  - Simplification; can be continually updated

Methods

- Defining the boundaries

  - What happens after a person develops schizophrenia and potentially modifiable factors

    o Excluded biological factors and early life exposures

- Used literature to identify key variables and relationships

  - Systematic reviews and meta-analyses; single studies; narrative reviews

  - Quantitative and qualitative evidence

  - Inclusive

  - Interactive CLD created using Kumu – online platform

  - Iterative process

  - Expert consultation

Schizophrenia and premature mortality

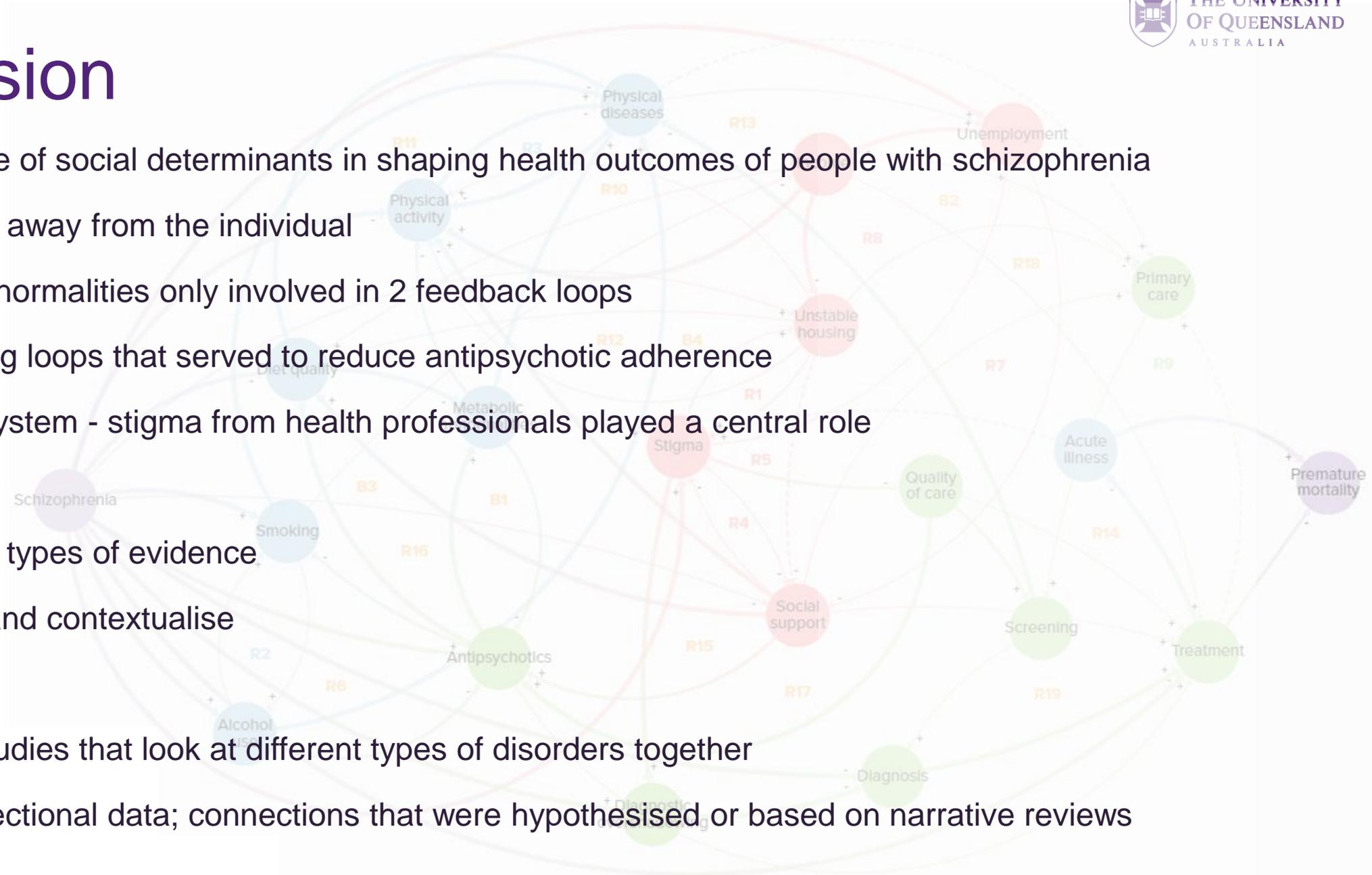*Applying a systems approach to explore the underlying complexity*

START PRESENTATION

Results

- 74 references

  – Systematic reviews, meta-analyses, narrative reviews, cohort studies, cross-sectional studies, longitudinal studies, case-control studies and qualitative studies

- 21 variables

- 68 connections

  – Stigma and social support had the most connections

- 23 feedback loops - 19 reinforcing and 4 balancing

  – Majority (15) were cross-domain loops; 5 within social domain, 2 individual and 1 healthcare

  – Unemployment was involved in the greatest number of loops

Discussion

- Important role of social determinants in shaping health outcomes of people with schizophrenia

- Shifting onus away from the individual

- Metabolic abnormalities only involved in 2 feedback loops

  - Balancing loops that served to reduce antipsychotic adherence

- Healthcare system - stigma from health professionals played a central role

- Strengths

  - Different types of evidence

  - Revise and contextualise

- Limitations

  - Using studies that look at different types of disorders together

  - Cross-sectional data; connections that were hypothesised or based on narrative reviews

Discussion

- Future directions

    - Dynamic modelling – quantitative simulation model

    - Further research on social determinants of health

- Implications

    - Shared-decision making and person-centred care

    - Prevention and early detection

    - Holistic and integrated care

    - Multisectoral government action

Building communities that care
A blueprint for supporting people severely affected by mental illness in their local communities by 2024

Rethink Mental Illness.

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