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How the Esther Network model for coproduction of person-centred health and social care was adopted and adapted in Singapore: a realist evaluation

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ABSTRACT

Objectives The Esther Network (EN) model, a person-centred care innovation in Sweden, was adopted in Singapore to promote person-centredness and improve integration between health and social care practitioners. This realist evaluation aimed to explain its adoption and adaptation in Singapore.

Design An organisational case study using a realist evaluation approach drawing on Greenhalgh *et al* (2004)'s Diffusion of Innovations in Service Organisations to guide data collection and analysis. Data collection included interviews with seven individuals and three focus groups (including stakeholders from the macrosystem, mesosystem and microsystem levels) about their experiences of EN in Singapore, and field notes from participant observations of EN activities.

Setting SingHealth, a healthcare cluster serving a population of 1.37 million residents in Eastern Singapore.

Participants Policy makers (n=4), EN programme implementers (n=3), practitioners (n=6) and service users (n=7) participated in individual interviews or focus group discussions.

Primary and secondary outcome measures Outcome data from healthcare institutions (n=13) and community agencies (n=59) were included in document analysis.

Results Singapore's ageing population and need to transition from a hospital-based model to a more sustainable community-based model provided an opportunity for change. The personalised nature and logic of the EN model resonated with leaders and led to collective adoption. Embedded cultural influences such as the need for order and hierarchical structures were both barriers to, and facilitators of, change. Coproduction between service users and practitioners in making care improvements deepened the relationships and commitments that held the network together.

Conclusions The enabling role of leaders (macrosystem level), the bridging role of practitioners (mesosystem level) and the unifying role of service users (microsystem level) all contributed to EN's success in Singapore. Understanding these roles helps us understand how staff at various levels can contribute to the adoption and adaptation of EN and similar complex innovations systemwide.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This study examined in-depth the transcultural adoption and adaptation of a complex person-centred care innovation in a large health system.

⇒ Realist evaluation and programme theory were used to articulate and contextualise mechanisms that explained how Esther Network was adopted and adapted in Singapore.

⇒ This organisational case study of a large-scale implementation was informed by empirical data from multiple sources including practitioner researchers.

⇒ This study included hands-on practitioners who provided invaluable access and insights into the empirical field, but also brought challenges of implicit assumptions, which were balanced through data and investigator triangulation.

⇒ Other limitations included the relatively small sample size and the fact that interviews were conducted via videocall due to COVID-19 restrictions.

INTRODUCTION

Ageing populations and rising healthcare costs put pressure on health systems, while at the same time, contemporary societal expectations are that members of society will be involved to a greater extent in their own healthcare.[1] These two factors have prompted a transformation from a disease-centred model to a person-centred one.[2,3] Although there is no agreed-upon definition of person-centred care (PCC),[4,5] common attributes include holistic, individualised, and respectful care where the particular values, experiences and circumstances of individuals guide the care decisions.[6] In this context, the process of coproduction, which involves 'users and professionals creating, designing, producing, delivering, assessing and evaluating the relationship and actions that contribute to the health of individuals and populations',[7] emerges as a vital ingredient in transforming healthcare organisations.[8]

It has become common for countries to seek healthcare innovations in other sociopolitical contexts and to adopt and adapt new models.[9–11] However, this process of adoption and adaptation of innovation can be challenging. The widely recognised Model of Diffusion of Innovations in Service Organisations[12] outlines critical components of that process, including the attributes of the innovation, system readiness, the adopters, the process of implementation, and communication.[12–14] At the moment, empirical evidence explicating the interactions among the identified components, and patients' role in the process of adoption is limited. While existing studies confirm that multiple factors affect the process,[15–17] there is a need for greater understanding of the role of human and social dimensions of change,[15] cultural and patient perspectives.[16 17] We undertook a realist evaluation using the CMOC (Context+Mechanisms = Outcomes Configuration) structure,[18 19] to identify mechanisms that explain the adoption and adaptation of a coproduced person-centred service. Our specific case involves the Singapore Health Services' (SingHealth) adoption of Sweden's Esther Network Model, and the contextual factors that influenced these mechanisms to yield observed outcomes.

METHODS
Setting
SingHealth is an integrated health network of 13 institutions with 5366 beds in four acute hospitals, three community hospitals, five national specialty centres and one primary care network with nine polyclinics. SingHealth cares for 1.37 million Singaporeans in the nation's East, and with over 40 clinical specialties, it also plays a national role in the city-state's population of approximately 5.69 million.[20] In 2021, SingHealth served a total of 2.47 million outpatient clinic attendances.[21]

The Esther Network (EN)
The original EN started in 1997 in the Highland health services in Jönköping County in Sweden, a system spread over six municipalities serving some 107 000 inhabitants. EN arose from a desire to improve the care coordination and experience of an ageing population. 'Esther' is a persona, namely an 88-year-old person with complex care needs.[22 23] This persona guides 'Esther coaches' (health and social care providers) in addressing complex patient needs; their work is supported through the network, coach training and resources from leadership ('sponsors'). Esther coaches ask the pivotal question 'What is best for Esthers (patients and caregivers)?',[22 23] prompting organisational change or service redesign.

Following a study trip to Jönköping, SingHealth leadership decided to emulate the EN model and launched EN Singapore in June 2016. Singapore is organised into three integrated health and social care clusters, each responsible for the care of the population within a specific geographical reach.[24 25] By 2018, two out of three healthcare clusters in Singapore had adopted EN.

Within 4 years, all 13 institutions in SingHealth had Esther coaches of their own to improve their respective care systems. These coaches, together with Esthers, led projects that improved processes, clinical outcomes and patient empowerment (by 2021, 85 EN improvement projects had been undertaken).

Research design
We undertook an organisational case study[26 27] of EN Singapore guided by Greenhalgh *et al* (2004)'s Diffusion of Innovations Framework in Service Organisations to illuminate the connections among process components and roles of actors[12] operating at the macrosystems, mesosystems and microsystems.[2] A microsystem is defined as the smallest functional unit where patients and practitioners work together to improve patients' health.[2] The mesosystem level includes middle managers who facilitate improvement, typically spanning several microsystems. The macrosystem level consists of top leadership that sets priorities for the care system.[2] Using realist evaluation, we articulated an initial programme theory, and used it to guide our data collection and analysis to generate a refined programme theory to explain how the adoption and adaptation evolved.[18] Data concerning the adoption and adaptation of the EN in SingHealth 2016–2021 were collected from June 2020 to January 2021. We applied the RAMESES-II reporting standards for realist evaluation.[28] An interactive research approach is used, where practitioner–researchers[29] lead this study.

Participants and data sources
Key and representative stakeholders were recruited through purposive sampling for the collection of primary data via semi-structured in-depth interviews (IDIs) and focus group discussions (FGDs). Secondary data included fieldnotes from observing EN activities and documents such as EN statistics and reports.

Data collection and analysis
An interview guide, observation guide and codebook were developed using the Diffusion of Innovation Model in Service Organisations.[12 30] The study team conducted seven IDIs and three FGDs with a total of 20 participants via ZOOM (due to pandemic restrictions) with audio-only recording. The interviews, each lasting 60–90 min, were transcribed verbatim and presented to participants for validation. The interviews generated approximately 250 pages of transcribed data. The coding structure developed was tested by two independent coders on two transcripts and modified to simplify consistent coding. Data from all IDIs, FGDs and observations were analysed using the modified codebook. ELPL and GYK coded the data deductively using the software NVivo V.12. Where new themes emerged, coders would discuss and add a new node to the codebook. Building on the innovation framework, coders further classified contextual factors under macrosystem, mesosystem and microsystem perspectives.[2] Discrepancies were

regularly discussed by ELPL and GYK until consensus was attained. The coding approach was discussed with and agreed on by all coauthors. All coded data were reviewed and discussed with a subgroup of authors. Four sample transcripts from each of the informant categories (decision-makers, programme implementers, service users and service practitioners) were first coded by the subgroup of authors. The themes generated from the coded data were shared with all coauthors who further refined them. CMOCs were generated based on the analysis; interview quotes illustrated the CMOCs.

Documents collated by EN between 2016 and 2021 were analysed for outcomes of the spread and impact on Esthers through person-centred improvement projects.

The Initial Programme Theory (IPT)

The IPT illustrated our hypothesis of how the EN model was effectively adopted and adapted from Region Jönköping County to SingHealth. The IPT was developed by ELPL and GYK, with contributions from Esther coaches from various backgrounds, who were not part of the research team. There were multiple brainstorming sessions to discuss and review secondary data sources, before arriving at group consensus on the IPT. Esthers were involved in subsequent refinement of the programme theory.

We articulated an IPT at the three system levels:

1. Macrosystem: We considered contemporary policies and societal changes that influenced our leaders' priority to develop services with greater involvement of service users. However, in an environment where the working culture was counterintuitive to a person-centred model, a more intentional approach was needed (context). The EN focus on 'what matters to Esther' was aligned with SingHealth tagline (mechanism) which led to its adoption (outcome).
2. Mesosystem: A structured process that included coach training, improvement projects, outreach to community partners (context) was essential for equipping the practitioners and having access to resources (mechanism) to sustain the network (outcome).
3. Microsystem: The sharing of service users' stories through Esther Café (context) benefited the coproduction partnership between users and providers. Users felt valued because their views were being heard; providers had greater job satisfaction (mechanism), which led to the diffusion of EN (outcome).

Patient and public involvement

Patients and caregivers participated in the FGDs. They reviewed the emerging themes identified from the preliminary data analysis and confirmed or refuted parts of the IPT according to their experiences and perspectives, and contributed to the refined programme theory.

RESULTS

Demographics and data sources

Seven participants were recruited for the IDIs and 13 for the FGDs. Field notes and data from secondary sources were also collected from June 2020 to January 2021. Participant demographics and data sources are detailed in table 1.

CMOCs of the decision to adopt EN

The data analyses yielded five CMOCs that explain how and why the decision to adopt the EN model was made. Table 2 details the five identified CMOCs at the macrosystem, mesosystem and microsystem levels.

At the macrosystem level, two key mechanisms identified related to the timing and content of the adopted model as reflected in these interview quotes:

> The thing about Esther is there was a convincing story… […] So we instinctively recognise "yeah, this is what we want for the people!", especially to allow them …. to live as independently as they can in the community. So, it was the ground [environment] getting more and more conducive, because we were talking about ageing in place compared to twenty years ago, where care was more acute-based and our demographics were not what they are today. (DM1, M, Health Administrator)

> I think it is very powerful that we use Esther, a patient, and it's very explicit… the whole simplicity of the concept, like asking what matters to you, what is best for Esther, that makes us feel that in SingHealth this is what we try to achieve, but we don't really have a good structure or process. And the Esther Network filled that. (PI3, F, Allied Health)

The notion of EN providing a convincing person-centred narrative ran through all interviews where contextual aspects, such as changing sociodemographic situations and a need for healthcare system innovations, were recognised as key factors shaping the demands for new inputs in the healthcare system. Another key factor was being able to capitalise on the right timing to implement these changes. The interviewees demonstrated readiness for accepting the seed of innovation in the shape of EN.

Similar readiness of the system could be observed also in the mesosystem, where attempts to move away from ineffective solutions had been made for some time.

> And when we went on that trip to Jönköping and they first presented the concept of Esther Network… I see it as the birth of Esther Network in SingHealth… I thought it encapsulated what we had been hoping to achieve… and not just what we have been doing all these years, kind of assuming we knew what patients needed. That point of learning about this together, as a group that was in Jönköping, was a big "aha" moment to me. […] That all of us saw it, felt it, heard it,

Table 1 Interviewee demographics and additional data sources

Primary data sources			
Participants	**Sex (male, M/female, F)**	**Years of Experience**	**Background**
In-depth interviews			
Decision-makers (DM), (n=4)			
DM 1	M	28	Health administrator
DM 2	M	>30	Health administrator
DM 3	M	30	Health administrator
DM 4	F	38	Health administrator
Programme Implementers (PI), (n=3)			
PI 1	F	8	Allied health
PI 2	M	14	Allied health
PI 3	F	25	Allied health
Focus group discussions			
FGD 1; service users (SU), (n=3)			
SU 1	F	6	Patient
SU 2	F	44	Caregiver
SU 3	F	>20	Patient and caregiver
FGD 2; SU, (n=4)			
SU 4	F	10	Caregiver
SU 5	F	>20	Patient and caregiver
SU 6	M	10	Patient
SU 7	M	5	Patient
FGD 3; service practitioners (SP), (n=6)			
SP 1	F	>7	Community Service Practitioner
SP 2	M	14	Doctor
SP 3	M	15	Doctor
SP 4	F	14	Allied health
SP 5	F	16	Community Service Practitioner
SP 6	F	22	Nurse
Field notes			
Observation of Esther team meeting		18 September 2020	10 pages
Observation of festival event		25 September 2020	14 pages
Secondary data sources			
Name of document		**Year**	**Length / Number**
Reports of projects			
Yearbook and project report		2017	74 pages
Yearbook and project report		2018/2019	114 pages
Yearbook and project report		2020	113 pages
Programme statistics			
Esther projects by themes and outcomes		2016–2021	85 projects
Esther coaches by professions and sectors		2016–2021	271 coaches
Esther sponsors by organisations		2016–2021	171 sponsors
Esther advocates by professions and sectors		2020–2021	379 advocates
Community partners		2016–2021	59 partners
Tabulation of Esther events		2016–2018	35
Tabulation of virtual events since COVID-19		2019–2021	18

Continued

Table 1 Continued

Secondary data sources		
Media publications		
Straits times (premier English language newspaper)	1 February 2018	1 section
'Zaobao' Chinese Newspaper (Premier Chinese language newspaper)	15 January 2017	1 section
Tomorrow's medicine (SingHealth Duke-NUS AMC Publication)	June 2016, Issue 25	2 pages
Singapore health (SingHealth Duke-NUS AMC Publication)	May/June 2017	3 pages
Tomorrow's medicine (SingHealth Duke-NUS AMC Publication)	2017, Issue 30	1 Page
Esther publicity video 'What really matters?'	2016	4 min 40 s
Esther publicity video 'Start by getting to know your Esther's needs'	2019	4 min 54 s
Group CEO memorandums to all staff		
Are we listening to our patients?	27 June 2016	1 page
Innovating for better patient care	7 February 2017	1 page
Towards better health for all	31 May 2017	1 page

wanted it, believed in it. I think that's critical to me. (DM4, F, Health Administrator)

This leader referred to how EN resonated with the pre-adoption organisational tagline at the mesosystem: 'Patients at the heart of all we do'. It is noteworthy that this collective alignment appeared to guide the process of adoption. For instance, recalling the group trip to Sweden including key leaders from the administrative, medical, nursing and allied health domains, this interviewee emphasised not only what was learnt, but the group spirit and shared experience paved the way for adoption of the innovation.

Through institutional changes to promote PCC in Singapore, the timing and content of the EN also interacted with attitudes and working conditions of healthcare staff. One of the key mechanisms observed is the idea of coproduction, which appeared to provide a sought-for response to the problem of dissatisfied and disengaged staff and top-down steering.

It's co-production all the way through. And when you are co-producing, Esther Network is where the rubber meets the road. You can plan community care, population health, but how do patients receive it… What is their experience when they interact with the system? …(DM3, M, Health Administrator)

One of the identified strengths of the EN was its ability to trigger and sustain shared commitment and engagement among staff and patients. Not only does this engagement correspond to the needs of the community, but healthcare workers also gained more insight into and control of their daily work and patient–provider relations.

CMOCs of the adoption and adaptation process

Eight CMOCs emerged reflecting the process of adoption and the adaptation of the EN model in SingHealth

(table 3). The outcomes reported in the last column of table 3 were generated through document analysis.

Examples of the impact of person-centred improvement projects on Esthers are detailed in table 4.

At the macrosystem level, interviewees perceived the leaders' visit to Sweden and public endorsement of EN as a trigger that spread to all staff, like 'a coproduction wildfire' (SP3, M, Doctor).

And with all the support from senior management, it helped to show the priorities of the institutions in the cluster… it is not just a few people who want this to happen, but all the way from senior management, the middle management, patients themselves. Having everybody involved and knowing that this is what we want to achieve, I think that helps a lot. (SP4, F, Allied Health)

It is a very inspiring model for people to see that my leaders are also trained. They know what I'm doing… and the importance comes from the sponsors' ability to provide resources, garner support and just allow things that deviate from the norm to happen. (PI1, F, Allied Health)

The top management demonstrated support with the announcement that the Esther philosophy would undergird person-centred initiatives. Middle management followed through by hands-on involvement as sponsors.

In addition, interviewees appreciated the bottom-up Esther narrative, which added to the meaningfulness of the subsequent person-centred projects.

I think the one main important role of patients' stories is they tug at the heartstrings and give people reason and motivation to relook at the way they have been doing things for patients. (PI1, F, Allied Health)

Table 2 Context, mechanisms and outcomes configurations explaining the decision to adopt the Esther Network (EN) model in SingHealth

Context	Mechanisms	Outcomes
Macrosystem		
(1) Demand from changing demographics to adopt a new care model	SingHealth leaders capitalised on the opportune time to introduce EN supported by its good track record	Collective decision to adopt EN in SingHealth
(2) A process and structure are needed to operationalise person-centred care in population health	The logic of EN, 'What is Best for Esther?', resonated with what clinicians intuitively want for their patients	Collective decision to adopt EN in Singapore
Mesosystem		
(3) Dissatisfaction with the busy-ness and target-oriented healthcare model	Learning trip to Jönköping by key SingHealth leaders reinforced a group and community spirit	Collective alignment
(4) Organisational tagline 'Patients at the heart of all we do' often interpreted differently by staff groups	The simplicity of the brand name Esther was perceived to be easily understood by staff and service users	EN symbolised hope that service users' participation will shape better care
Microsystem		
(5) Workforce less engaged; the top-down and formal approach reduced work satisfaction	Leaders recognised that the EN model promoted coproduction between staff and patients	Engaged and activated workforce

The part about meeting like-minded people encouraged all to come together to work through all these things. That is even so in the community and it helps that we all support one another. (PI2, M, Allied Health)

The story of the local Esther appealed to a sense of community and brought like-minded coaches together who found themselves spreading EN within their professional community's social networks.

I feel that I also sell [tell about] the Esther Network. Yesterday I was teaching at Republic Polytechnic, so I sell [share] what Esther Network is about and they were very excited to know how Esther Network came about. I am very happy to share with everyone. (SP6, F, Nurse)

As a result of this innate motivation to focus on what service users value, traditional professional lines were fused, to the approval of services users:

I think it's the effort. You all are looking at things from different perspectives [holistically]. You are a pharmacist and yet you can look into other things and I think that is very important. (SU2, F, Caregiver)

One thing I remember vividly about the training was, we were asked to shadow the Esthers to identify their pain points… So this is a bit different from the norm where we come in with ideas, we assume we know the answer.…But in the end, it was very enlightening. You feel better because you know you churned out solutions with the input of the people that you are trying to help. And you're more convinced that you will probably make an impact because you get a voice from them. (SP2, M, Doctor)

Service users shed light on the value created when Esthers and coaches interacted at the microsystem level:

That by giving Esthers a platform to share and having their voices heard, they just feel like the care improved… That in itself is quite empowering… (PI1, F, Allied Health)

How I see the Esther café is …[…]… coming up with a new trajectory for patients, a new alternative. …[…]… to keep people out of it (health system) as much as possible.…[…], then we keep our people healthier, give them the best possible chance they can have. That's where I see this hope from the Esther Network and Esther café. (SU5, F, Patient & Caregiver)

Within the Asian culture, medical paternalism and efficiency have been prominent until recently, and so promoting PCC seemed to be a challenge. In our study, SingHealth leadership may have set the organisational culture in place but our larger societal culture such as the acceptance of unequal power[31–33] and inclination towards compliance[34] has the potential to disrupt the adoption of an innovation. In the case of EN, we found that the innovators instead leveraged the tendency of the people to comply with hierarchy[35 36] by setting up a formal structure. This structure met the need for comfort with order,[31–33 35] which in turn facilitated the adoption and adaptation of EN in Singapore.

One of the differences is, we are like, super organised, and over the years we have become more organised. We have more sub-committees and different people looking at different aspects… this is one of our strengths because then there are dedicated attention and manpower to look into different aspects of this big network. (PI1, F, Allied Health)

Table 3 Context, mechanisms and outcomes configurations underpinning the adoption and adaptation of the Esther Network (EN) model in SingHealth

Context	Mechanisms	Outcomes
Macrosystem		
(1) Need for understanding of an effective model of PCC	Ministerial visit to EN Sweden signalled nation's priority to adopt a PCC model perceived as relevant and transformative by policy makers and healthcare operators	Spread of EN nationally to two out of three healthcare clusters
(2) The need for order and hierarchical structures in local culture	Public endorsement from leaders affirmed staff about their participation in EN *	All SingHealth institutions (n=13) have Esther coaches
	Involvement of coaches' supervisors as sponsors enabled coaches to initiate changes	171 project sponsors with low attrition rate of 0.03%
	Leaders recognised the role of doctors as coaches to lead in change management*	9% of coaches were doctors, with 16% of projects led by them
Mesosystem		
(3) Insufficient understanding of PCC	Coach and advocate training centred the Esther story brought like-minded people together*	271 coaches and 379 advocates trained
(4) The need for order and hierarchical structures in the local context	A head coordinator, an organisation structure with formal roles and responsibilities put in place increased coaches' ownership *	Expansion of network
	An innovation unit to support coaches enabled them to scale person-centred projects that reached more Esthers*	25 out of 85 (>30%) projects upscaled across settings
(5) EN was a new concept in the SingHealth local setting	Communication efforts through official launch, newspaper articles and yearbooks were intentional and increased understanding of EN and Esther stories	Increased participation and interest in EN
(6) Professionals worked in silos and health-social engagements tended to be superficial and short-lived	Prerequisites in selection of coaches resulted in synergy among multi-professionals; the common passion in improvement work sustained the continuing participation of coaches	Active coaches reflect the workforce distribution– 9% doctors, 11% administrative, 18% allied health, 27% nurses, 35% community practitioners
	EN provided a long-term platform for health and community practitioners to meet and leverage on existing efforts to codrive socialhealth integration and improvements	59 (>70%) community practitioners in the region joined the network with 76% projects on social-health improvements
Microsystem		
(7) Patient or citizen involvement was an unfamiliar concept	Esther's story was a driving force to bring people together; the idea of coproduction between providers and users fostered trust and strengthened relationships	The relatedness and sense of being valued motivated Esthers to continue participation
(8) Reductionist approach in patient care	Coaches saw the healthcare system as it was through Esther Café and shadowing of Esthers; the approach to start with what mattered to Esthers energised them	100% Esther projects were coproduced with services users and 83% of coaches had completed an Esther project
	Coaches who cared routinely for Esthers recognised they were well-placed to engage Esthers and make improvements in various areas (more examples in table 4)	85 person-centred improvement projects in 5 years: 22% made process improvements; 23% resulted in service innovations; 35% improved clinical outcomes; 35% increased services users' empowerment in self-management

*Denotes the mechanisms that facilitated the adaptations made in EN Singapore.
PCC, person-centred care.

Table 4 Examples of person-centred improvement projects

| What mattered to Esthers?	Intervention	Description	Impact on service users after intervention
Process improvement: Esthers scheduled for knee joint replacement or arthroplasty wanted to go home earlier and receive physiotherapy in the familiar home environment	Esther coaches (physiotherapists), orthopaedic surgeons, nurses and finance personnel, worked out an enhanced recovery after surgery (ERAS) package that is financially viable and included two home visits by a physiotherapist or nurse	► Average length of hospital stay (LOS) after arthroplasty is 4 days ► Esthers felt they could sleep better and walk more if discharged from hospital earlier ► The ERAS programme was piloted to reduce the LOS and meet Esthers' needs	► ERAS was extended to about 1000 patients ► LOS improved from 4 days to 1 day ► Esthers' functional abilities were not worse off and are being measured ► Programme has been scaled up; community partners are onboard to provide home care
Service innovation: Esthers with Parkinson's disease (PD) and experienced gait freezing wished to walk to the supermarket to do their own grocery shopping	Esther coaches (community case managers and hospital physiotherapists) partnered with innovators from an institute of higher learning to produce a low-cost, portable laser light attached to a walking aid as a visual cue to reduce gait freezing	► Gait freezing is characterised by episodes of inability to produce effective forward stepping ► Visual cues like a laser beam are able to reduce gait freezing ► Products in market either have high cost, or are not designed for patients with walking aids	► Esther tested the prototype and walked with minimal assistance for about 270 m ► Esther felt happy and rated her performance as 7/10; she planned to improve her endurance ► Esther gave feedback to improve the prototype, for example, to see the laser light better in sunlight ► This project is being scaled up to more patients with different types of walking aids
Improved clinical outcome: Esthers wanted to increase their mobility and wean off urinary aids during their hospitalisation	Esther coaches (physiotherapists and nurses) provided education to ward staff, patients and family members about the importance of walking; walking aids were placed conveniently at the bedside	► 23 Esthers were recruited in one Internal Medicine Ward ► 100% of them were ambulant and 21% relied on urinary aids prior to hospitalisation ► During their hospital stay, although they were safe to walk, only 9% walked and 100% were put on urinary aids	► Walking patients increased from 9% to 91% ► Daily walking increased from 1 to 3 times ► 97% of Esthers were weaned off urinary aids ► No complications were reported by Esthers ► Project has scaled up to 7 Internal Medicine wards
Increase in empowerment: Esthers with frequent emergency medicine and hospital admissions preferred to live confidently at home	Esther coaches (nurses and community partners) coproduced a care plan with Esthers that tailored to their recovery goals; home visits, telehealth services aimed to improve Esthers' confidence in activities of daily living	► Mdm T had an average of 11 emergency medicine visits and eight hospitalisations in 5 months ► 63 Esthers with similar background and needs were enrolled ► Early collaboration among providers and patients helps patients meet their needs	► Mdm T has had zero emergency or hospital admissions for 4 years after intervention ► In the sample of 63 patients, the median confidence score increased from 66 to 85 points after intervention ► The project has assimilated into a routine work process and is tracking hospital readmission rates
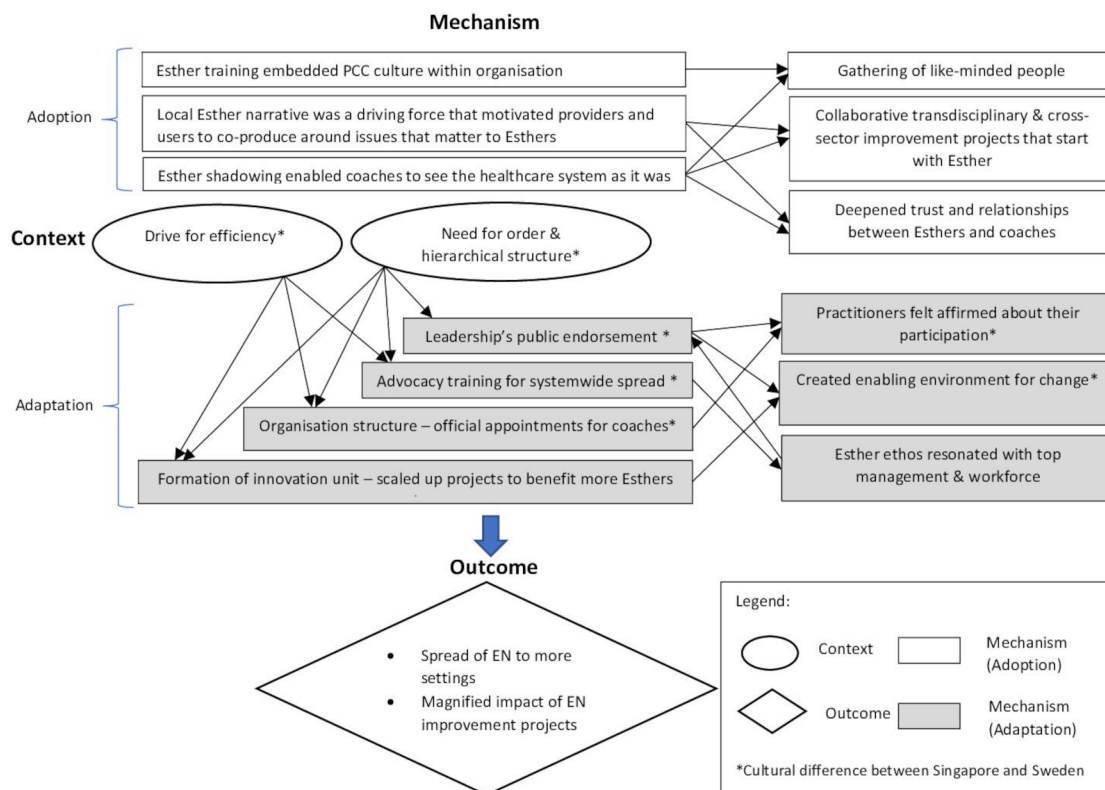
Figure 1 Refined programme theory for adoption and adaptation of the Esther Network (EN) model in Singapore. PCC, person-centred care.

Empirically Refined Programme Theory (RPT)

Empirically RPT (figure 1) explains how the EN model was adopted and adapted to promote person-centred services in SingHealth. The 'how' is explained by the identified mechanisms that act at the macrosystem, mesosystem and microsystem levels (table 3), under conducive conditions, to generate desired outcomes, namely, the adoption and spread of EN to all institutions within SingHealth, and to another healthcare cluster, through improvement initiatives facilitated by trained Esther coaches and the satisfaction of service users.

Cross-cultural adaptation

At the point of adoption, specific adaptations were apparent, and it was corroborated by the IPT, such as the public endorsement by SingHealth leadership and the need to set up a formal structure, which is different from EN in Sweden that operated on a more voluntary nature, with fewer guidelines than are customary in Singapore.

Other adaptations emerged over time and they modified the IPT. These included: the formation of an innovation unit to facilitate the scaling up of person-centred initiatives systemwide. As a nation that prioritises efficiency and is cognisant that PCC processes have improved population health,[37] Esther projects that could benefit more service users were started in the wider system. Another adaptation was a brief training of Esther-advocating care practitioners, to augment the coach training programme. Although SingHealth leadership had endorsed the systemwide spread of the EN model, in reality, care was

predominantly focused on biomedical outcomes and productivity. Furthermore, busy practitioners hardly had time for training. Hence, the 2-hour EN advocacy training was introduced as a short programme, focused on the narrative of Esther. The purpose was to sensitise practitioners to apply PCC in their daily work. With increased awareness, these advocates collaborated with coaches or advanced to become Esther coaches.

These adaptations that emerged over time, were largely, influenced by the local efficiency-driven culture. In the case of EN adoption in Singapore, it was important for adopters to ensure that both EN and scalable person-centred improvement projects could spread to the wider system. For EN to be feasible in other systems, these cultural adaptations are noteworthy, especially for systems operating in similar contexts.

Another interesting detail is the retention of the specific name 'Esther' in Singapore. The authors recalled many conversations among leaders, practitioners and Esthers. It was difficult to have a local name that represented the diversity of ethnic groups in Singapore; hence, a consensus was reached to keep the name 'Esther' because of its universal applicability.[22 23] The local service users were curious but accepted the explanation that the name represents the user persona.

DISCUSSION

The EN model was successfully transferred from its origin in Sweden and it yielded the desired outcome
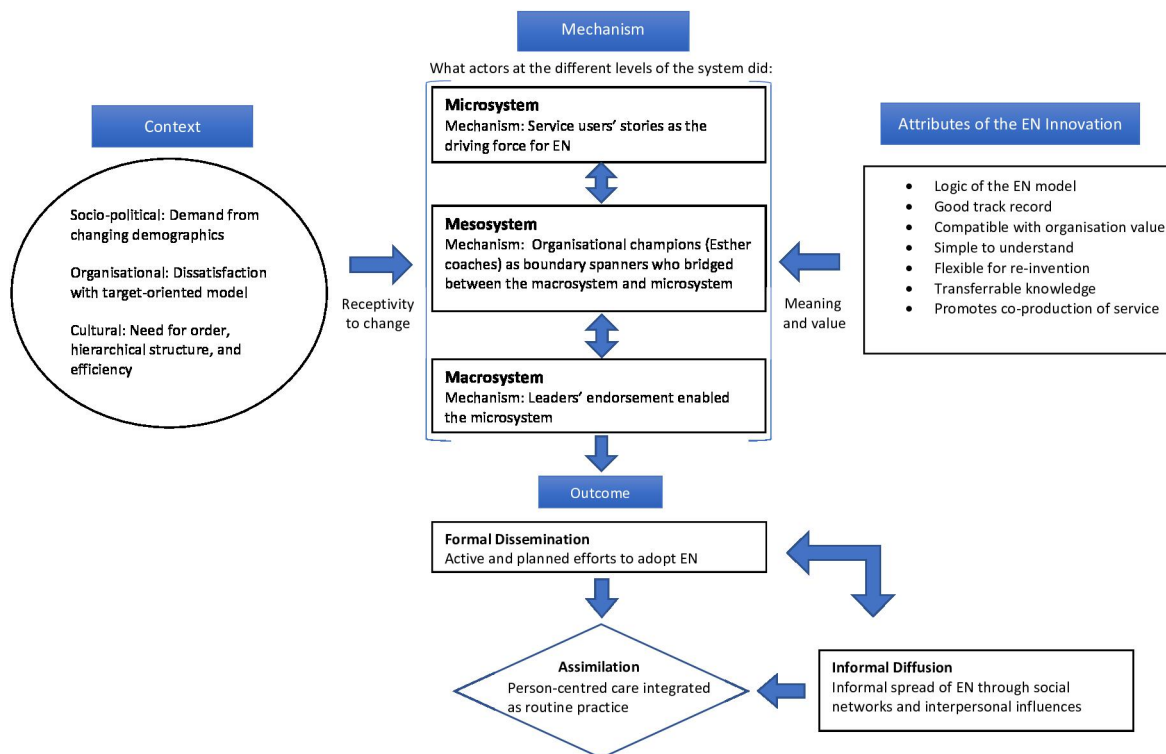
Figure 2 Conceptual model for understanding the determinants of dissemination, diffusion and assimilation of an innovation in Singapore (the Esther Network (EN) Model).[12]

of the growth of person-centred services in SingHealth. Greenhalgh *et al*'s Model of Diffusion of Innovations in Service Organisations,[12] which informed the design of our interview guide, was used deductively to analyse and make sense of the data. We found that the interactions among the innovation, actors and context determined the continued diffusion of EN programme in Singapore.[12] The welcoming attributes of the EN innovation were retrofitted to capitalise on the hierarchical and order-oriented culture in Singapore. Three groups of actors (Esthers, who provided the unifying force; Esther coaches, who bridged between systems; top management, who enabled the microsystems to make changes) created a context for change (ie, application of the EN model) and enabled actions[12] that made EN Singapore a lasting approach to person-centred services.

We relate our empirical findings to our theoretical framework and formerly published studies, and discuss the implications for stakeholders in other contexts who similarly wish to adopt complex service innovations to achieve desired service improvements in health and social care (figure 2).

Macrosystem actors: leadership alignment, attention to timing, endorsement and creation of a receptive context

Our findings showed that leadership alignment in the adoption decision paved the way for the innovation to take hold. Previous research has established that the decision to adopt an innovation is rarely dependent on an individual.[12 30] Authoritative decisions may produce

initial adoption, but may reduce the likelihood that the innovation be sustained.[30] This understanding implies the importance for leaders in other systems who similarly wish to adopt complex service innovations, to consider developing a consensus with local stakeholders from the outset. One way is through collective learning[38–40] (in the case of SingHealth, the study trip), when adopting an innovation from elsewhere.

When SingHealth leaders endorsed EN publicly, it increased receptivity for the smallest units of the organisation to start making changes. The intermediate level (the mesosystem) responded with support for the microsystems.[2] Consistent with previous work on leading organisational change,[41] leaders' intentional alignment of goals for staff at all levels in this case, was the first step to sustaining change. In line with studies on microsystem interactions with and support from macrosystem leaders by Nelson *et al*,[2] the implications for practice are: for an innovation to take hold, leadership support was a non-negotiable mechanism that motivated both practitioners and users to act in line with the innovation, regardless of cultural context.[42–44]

Mesosystem actors: organisational champions (Esther coaches) as boundary spanner, bridging the macrosystems and microsystems

Having organisational champions (in this case, Esther coaches, who had significant links inside and outside the organisation to connect the macrosystems and microsystems) made the adoption of an innovation

more likely.[12 29 45] From our data, Esther coaches played a key role of capturing ideas generated from working in microsystems with Esthers and transforming them into innovations for the organisation. Godfrey *et al*[46] found the important role of coaching in developing these organisational champions. What remains unclear in both our empirical findings and published research, is effective promotion of the role of these champions for the organisation to harness and sustain their motivation and energy.[12]

Microsystem actors: service users' stories as the driving force; the social and relational aspects in the adoption process

In our findings, the story of Esther was the main driving force that brought heterogeneous groups together for a common purpose. Other studies attributed patients' voice to helping healthcare professionals reflect and generate new insights in healthcare innovations.[47]

Within the microsystems, relationships and commitments were deepened when practitioners acted on Esthers' story by shadowing Esthers in their care journeys. This observation is in line with research that suggests healthcare is a service rather than a product,[8] hence all service innovations take place in the social context of human interactions and collaboration.[14 48] It was similarly reflected in the relationship between coaches, which exemplified the power of the social capital—that of networking, norms, bonding and bridging between actors—that sustains innovations.[48] Consideration of these human and relational aspects that affect the way people act, and the social forces that influence their actions,[14] is relevant for the success of any complex service innovations, in SingHealth and elsewhere.

From active dissemination (vertical, top-down spread) to informal diffusion through social mobilisation of organisational champions (horizontal, bottom-up spread)

According to Greenhalgh *et al*,[12] the spread of an innovation can be seen as a continuum. At first an innovation is spread vertically (through formal dissemination, ie, 'make it happen'),[12 16] then spread becomes horizontal (through organic and informal processes, that is, 'let it happen').[12] Connections facilitated via horizontal spread is a form of social mobilisation powered by the professional community's social networks.[12 16 49] We observed a similar pattern in our case: the spread of EN was largely vertical at the beginning, but over time, it became more horizontal, as staff assimilated the philosophy into routine practice when they provided care or when they taught. This is akin to the notion of normalisation process theory,[50] that addresses factors necessary for innovations to be integrated into routine work. This corresponds to findings by Robert *et al*,[16] in which adoption of the Schwartz Centre Rounds was shown to have a cumulative effect of social processes, where informal diffusion among professional networks started first, before more formal planned dissemination activities.[16] Similarly, in our study, we observed that bottom-up initiatives that happened organically in the microsystems were subsequently scaled up, and applied top-down in the organisation. Understanding these leads us to postulate that both formal dissemination and informal diffusion contribute to the assimilation of an innovation. Further research on how these work in practice, will benefit the rate of spread and sustainability of complex service innovations.

Interaction between the innovation, context and actors

Our empirical evidence explicated the tripartite relationship (figure 2) that made the adoption of innovation possible: alignment between the innovation's attributes and the organisation's value, and the sociopolitical context that increased the organisation's receptiveness to change. Further, observations that the evolution of relationships, interactions and collective meaning-making in the EN model acted as a glue that held the network together, hold general learning for systems who wish to adopt complex service innovations across contexts.

STRENGTHS AND LIMITATIONS

The paper showed how a health and social care service innovation from Sweden was adopted and transformed through a substantial initiative in Singapore by adapting it to the 'receiving' context. It examined in-depth, the cross-cultural factors in this transnational adoption of a complex innovation in a large healthcare system, and presented an argument of these cultural influences as both barriers to, and facilitators, of change. The use of realist programme theory to articulate and contextualise the mechanisms that explained how EN was adopted and adapted was relevant and appropriate to the research question. The study addressed the challenges of scaling up an innovative improvement concept, where there is limited published research, thereby adding to the literature on adoption and adaptation of innovations across contexts.

The study took an interactive research approach,[29] with two practitioner–researchers, ELPL and GYK, who are also service practitioners actively involved in the EN. ELPL is the lead coordinator of the Esther programme in SingHealth, and GYK is an Esther coach. The close interaction and dialogue among participants and researchers may have increased the robustness of the study[51–53] and facilitated the change process.[29] Limitations include possible researcher bias, meaning the researchers may not have immediately recognised implicit assumptions, conflicts of interest or may have avoided critical examination of the programme.[29] However, the interactive research process in this study was based on theory throughout and was not dependent on empirical data alone. The study's trustworthiness is also safeguarded by the participation of external researchers (a form of investigator triangulation). Furthermore, the study design and findings were presented for validation to service users and practitioners who were not part of the research team.

Potential recall bias, from the fact that data collection was 4 years after the implementation of EN, was overcome by having multiple data sources. The relatively small sample size could be a limitation, while the triangulation of data from multiple sources provided data pointing in the same direction. The fact that the interviews were conducted via videocall due to COVID-19 restrictions could be another limitation, however, it demonstrated that the researchers were able to carry out important interviews in a timely manner despite the pandemic restrictions.

Our study may open a new area of research into organisational intermediary structures and roles, linking top-down and bottom-up approaches,[54] to realise the full potential of person-centred service innovations.

CONCLUSIONS

This study provides in-depth insights into a large-scale example of the transnational adoption of a health and social services innovation, and how it significantly improved the degree of person-centredness in the adopting system (SingHealth).

The empirically derived RPT explains the mechanisms at the macrosystems, mesosystems and microsystems that engaged leaders, practitioners and service users as they took actions to generate observed service outcomes. RPT highlights the importance of considering cultural adaptation, of users and practitioners coproducing person-centred services, and reveals facilitating interactions between the innovation, context, actors and underlying mechanisms, which yielded the adoption of the EN model and desired person-centred service outcomes.

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