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29 **Innovations to reduce maternal mortality and improve health and wellbeing**
30 **of adolescent girls and their babies in Sierra Leone**

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64 **Abstract**

65 Sierra Leone has one of the highest maternal mortality rates in the world, and this burden falls
66 primarily on adolescent girls, a particularly vulnerable group, often from disadvantaged communities
67 and usually driven by poverty, lack of education and employment opportunities. Stigma and
68 abandonment, lack of family-based support and delayed care-seeking have been found to be
69 important contributors to maternal adolescent mortality. Social complexities and high rates of child
70 marriage and adolescent pregnancy also prevent girls from realizing their full potential in all aspects
71 of their development. We discuss the development of a locally designed community-based
72 mentoring intervention '2YoungLives' (2Ys) for adolescent girls, and the formal evaluation planned
73 as part of the programme of a multidisciplinary Global Health Research Group (CRIBS), that aims to
74 develop and implement simple, scalable innovations to reduce maternal and perinatal mortality and
75 build research capacity and expertise in Sierra Leone.

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78 **Keywords**

79 Maternal mortality; mentoring; community-based interventions; adolescent girls; teenage
80 pregnancy; Sierra Leone

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83 **Commentary**

84 Sierra Leone (SL) has one of the highest maternal mortality rates in the world (717 deaths per 100,000
85 live births in 2019)^{1,2} with this burden falling heavily on adolescent girls. More than a third of women
86 aged 20-24 in SL have given birth before the age of 18 (more than 10% of girls before the age of 16);
87 the lifetime risk of maternal death is 1 in 17, but for these pregnant adolescents some suggest it is
88 higher still.³ In addition, infants born to adolescent mothers are at increased risk of sickness and
89 death.¹ More than two thirds of maternal deaths are caused by hemorrhage, hypertension and
90 sepsis; about a third are due to unsafe abortions among adolescents.² Many deaths are preventable
91 with simple, cost-effective interventions available in SL, but unfortunately there are often disparities
92 in access and availability, and delays in delivery, escalation, and quality of care.³

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95 Adolescent girls from disadvantaged communities are particularly vulnerable due to the pressures
96 associated with poverty, lack of education and employment opportunities⁴. Child marriage and
97 adolescent pregnancy (39% and 28% respectively) often prevent girls from realising their full
98 potential in all aspects of their development.⁵ Gender based violence is also prevalent, with more
than half of girls experiencing physical violence.⁶ In a country where young people constitute the

99 majority of the population, improving the sexual and reproductive health and wellbeing of girls
100 remains a top priority, recognized by successive governments policies. The establishment of the
101 National Secretariat For The Reduction Of Teenage Pregnancy in 2013 and the development of the
102 first multi-agency, cross-ministry National Strategy (2013-2015) was impeded by diversion of efforts
103 and limited resources during the Ebola epidemic, which also exponentially increased rates of
104 adolescent pregnancy.⁷ However a revision and update of the national strategy was relaunched in
105 2018, which included child marriage.⁸

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107 Much of the focus appears to be, quite rightly, on primary prevention of adolescent pregnancy and
108 child marriage, including basic education, life skills training and quality sexual and reproductive
109 health services. But adolescent girls are still getting pregnant and dying, and identifying interventions
110 that also support adolescent girls once pregnant and parenting is crucial to save their lives and those
111 of their babies. Investment in their health and development will achieve a generation of adolescent
112 mothers and babies who do not just survive, but also thrive. Sensitizing communities about
113 adolescent pregnancy, strengthening existing youth-friendly services, and working closely with
114 stakeholders (government, gatekeepers, community actors) are crucial to facilitating the support and
115 reintegration of pregnant and parenting adolescent girls. Indeed, the recent *Lancet* Series on
116 Optimising Child and Adolescent Health and Development highlights the need to support a holistic
117 agenda where integration and implementation of evidence-based interventions across health,
118 education, and social systems must improve to protect, nurture, and support the health and
119 development potential for every child and adolescent.⁹

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121 A community-based household survey conducted by grassroots organisation [Lifeline Nehemiah](#)
122 [Projects](#) (LNP) found a maternal death rate of 1 in 10 for under-18-year-old in Eastern Freetown in
123 2015. A subsequent study identified contributing factors to high maternal adolescent mortality such
124 as stigma and abandonment, lack of family-based support and delayed care-seeking.¹⁰ One of the
125 potential interventions identified by the LNP team was a mentoring scheme for the most vulnerable
126 pregnant girls. Thus in 2017, they developed and piloted a holistic and locally designed community-
127 based mentoring intervention '[2YoungLives](#)' (2YL) from pregnancy to one year post-birth for
128 adolescent girls. Mentors, who are kind, compassionate, respected community members, encourage
129 adolescents to take up antenatal care and hospital birth; re-establish family connections where safe
130 and appropriate; promote health-seeking behavior; provide practical advice about childbirth,
131 parenting and contraception; support mentees with small business start-ups; and encourage them
132 to return to education or start vocational training with educational bursaries. 2YL has been piloted
133 across 4 districts over 4 years, and preliminary findings are promising, with over 250 girls mentored
134 and no maternal deaths. Girls report close loving relationships with their mentors, and a sense of

135 agency and wellbeing. All girls have run a small business to enable them to eat well in pregnancy and
136 save money for their birth; many have returned to live with their parents or family members; some
137 have returned to education, and others have learned vocational skills and gained employment.
138 Potential mechanisms by which the mentoring scheme may work include relationship-building,
139 engagement and advocacy, educational empowerment, social and economic empowerment, and
140 respectful community involvement. However, a more robust and formal evaluation is needed to
141 understand the feasibility of 2YL in other communities and how it can address determinants of
142 adolescent maternal and neonatal mortality and general health and wellbeing.

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144 The 2YL cluster trial and nested mixed methods process evaluation will formally assess the feasibility,
145 acceptability and implementation of the mentoring scheme. This trial is now part of a larger
146 programme of work, [CRIBS](#), a Global Health Research Group funded by the UK's National Institute for
147 Health and Care Research and led by the University of Sierra Leone and King's College London in
148 collaboration with multiple partners (see collaborators). This is a multidisciplinary group which aims
149 to develop and implement a number of simple, scalable innovations to reduce maternal (including
150 adolescent) and perinatal mortality and build research capacity and expertise in SL.¹³ Findings from
151 CRIBS and specifically 2YL will provide more holistic information for communities and local and
152 national decision-makers and refine procedures to inform future scale-up work aiming to reduce
153 mortality among adolescent girls and their babies, and improving their health, educational and socio-
154 economic welfare. Part of the uniqueness of 2YL is the meaningful community engagement and
155 involvement which ensures community buy-in and therefore promotes sustainability. Indeed, there
156 has been national and international interest and 2YL has been featured on the [2022 UNFPA State of
157 the World Population Report](#), and the [BBC World Service 'People fixing the World'](#). We believe this
158 mentoring scheme has the potential to save lives and promote health and wellbeing of adolescent
159 girls and babies, and thus become a model of good practice for adolescent pregnancy, to be adopted
160 more widely in SL and elsewhere.

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202 **Declarations**

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204 **Data availability statement:**

205 No data are available.

206

207 **Ethical Statement:**

208 Patient consent for publication: NA

209 Ethical approval: NA

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211 **Competing interests**

212 We declare no competing interests.

213

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220

221 **Authors' contributions**

222 LN, MK, PK and PTW led the development and initial piloting of 2YoungLives. CFT drafted the initial
223 manuscript, LN and AR refined this manuscript and all authors commented on and approved the final
224 manuscript.

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226

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