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Abstract

Sexual violence is a pervasive problem in South Africa. Although we have pioneered a range of specialised post-rape structures and services over the last two decades, access to and availability of such services is varied, and the systems are plagued by inadequate training, weak intersectoral collaboration and a lack of resources, which result in significant provincial discrepancies (Jewkes et al., 2009; Machisa et al., 2017; Vetten et al., 2008). Evidence suggests that Sexual Assault Evidence Collection Kits (SAECKs) is one area that demands urgent attention. The current backlog in analysing SAECKs is estimated to be at over 100 000 DNA samples (Waterworth, 2020).

As local research on SAECKs is limited both in quantity and scope, this study undertook a semi-systematic literature review of published articles that address rape kits and international best practices to identify evidence-based recommendations for SAECK policy and future research. From a total of 206 sources, 31 were eligible for inclusion in the review with all but one article presenting research conducted in the United States, predominantly focusing on the national rape kit backlogs. The literature shows that ineffective use of SAECKS in South Africa may not be the result of a lack of specialised services but rather the poor implementation of related policy. Recommendations for best practices must address these challenges while also accounting for the context-specific factors that may impact the uptake and implementation of rape kit policy, such as the availability of resources, accountability mechanisms and the prioritisation of sexual assault cases. The key recommendation argues for expanding and improving existing provisions in respect of SAECKs in South Africa and identifies realistic and strategic measures for addressing their ineffective use.

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List of Abbreviations

CAS	Case Administration System
CJS	Criminal Justice System
CODIS	Combined DNA Index System
CPA	Criminal Procedure Act
CRFSS	Criminal Record and Forensic Science Service
DoH	National Department of Health
DoJ&CD	National Department of Justice and Constitutional Development
DNA	Deoxyribonucleic acid
DSD	National Department of Social Development
EMS	Evidence Management System
FCS	Family Violence, Child Protection and Sexual Offences Unit
FSL	Forensic Science Laboratory of the South African Police Service
GBVF	Gender-Based Violence and Femicide
HIV	Human Immunodeficiency Virus
IO	Investigating Officer
NFDD	National Forensic DNA Database of South Africa
NGO	Non-Governmental Organisation
NPA	National Prosecuting Authority
PEP	Post-Exposure Prophylaxis
PERK	Physical Evidence Recovery Kit
PHC	Primary Health Care Package
PTSD	Post-Traumatic Stress Disorder
QMS	Quality Management System

SAECK	Sexual Assault Evidence Collection Kit
SAFE	Sexual Assault Forensic Examiner
SAK	Sexual Assault Kit
SANE	Sexual Assault Nurse Examiner
SAPS	South African Police Service
SOC	Sexual Offences Court
SOEC	Sexual Offences Evidence Collection Kit
SOL	Statute of Limitations
SORMA	Sexual Offences and Related Matters Amendment Act of 2007
TCC	Thuthuzela Care Centre
UCT	University of Cape Town
UK	United Kingdom
US	United States of America

Chapter 1: Introduction

1.1. The story behind South Africa's Sexual Assault Evidence Collection Kits (SAECKs)

Sexual violence is a devastating and pervasive problem in South Africa. Recent statistics released by the South Africa Police Service (SAPS) place the number of reported rapes at 53 295 for the 2019/2020 period with the months of October to December 2020, alone, seeing over 12 000 rapes reported (SAPS, 2020; SAPS, 2021). A study conducted by Jewkes & Abrahams (2002), suggested that only one in nine women who are raped actually report the incident so in reality, this figure is much larger.

Over the last two decades, South Africa has seen the development and introduction of a range of specialised post-rape structures, including the multi-disciplinary, 'one-stop' Thuthuzela Care Centre (TCC) model; the first of its kind in the world. Although the country has pioneered several best practice interventions in post-rape service provision, they have been impeded by weak implementation, poor collaboration between state departments, a lack of proper resource allocation, and discrepancies in the access to and availability of specialised services across provinces (Bornman et al., 2013; Dey et al., 2011; Vetten et al., 2010). One of the key challenges currently facing the criminal justice system in terms of sexual assault cases is the ineffective use of Sexual Assault Evidence Collection Kits (SAECKs). SAECKs were developed to standardise the collection of medico-legal evidence thereby assisting in the investigation and prosecution of sexual assault cases (Jina et al., 2011).

Since their introduction in 1992, SAECKs have undergone several revisions to improve their ease-of use and effectiveness, yet local research continues to report that kits are being poorly collected by healthcare providers and that approximately 20% of collected SAECKs are not even submitted to the SAPS Forensic Science Laboratory (FSL) for testing and are, therefore, never analysed (Jewkes et al., 2009; Vetten et al., 2008; Machisa et al., 2017). Furthermore, according to the SAPS' August 2020 presentation to Parliament's Police Portfolio Committee, there is currently a backlog of 28 465 DNA samples from Gender-Based Violence (GBV) cases. Realistically, however, this figure is widely expected to be well beyond 100 000 (Ellis, 2020; Comins & Maqhina, 2020; PoliticsWeb.co.za, 2020).

The FSL backlog is not a new phenomenon and has been growing for the last two decades. However, exacerbated by the recent loss of funding, the FSL's operations have halted due to a lack of consumables and maintenance contracts (Waterworth, 2020). In November 2020, it was announced that the National Police Commissioner had allocated R250 million to the SAPS' forensic division for expediting DNA processing and assisting in the elimination of the FSL backlog (Parliament.gov.za, 2020). Although the acknowledgement of the need to urgently address the backlogs and the allocation of funding is commendable and certainly very needed, it may not be enough to adequately address the extent of the laboratory dysfunction reported nationwide. Furthermore, considering this allocation in terms of the country's implementation issues, lack of transparency and history of corruption, concern regarding what will realistically come from this funding seems warranted.

In 2019, a contract to supply SAECKs was granted to Acino Forensic at a cost of nearly R500 million (Makinana, 2020). However, in the same year, the country experienced a national 'rape kit crisis' during which 76% of SAPS stations had no SAECKs in stock for several months (The Citizen, 2019; IOL, 2019). In August 2019, the SAPS National Commissioner reported that the country required 68 542 SAECKS while only 18 241 were available (The Citizen, 2019; IOL, 2019). A SAPS spokesperson stated that a dispute with the supplier forced them to cancel their contract after allegations of corruption arose between the supplier and members of the SAPS (The Citizen, 2019; IOL, 2019).

The pressure placed on the South African government over the last few years with the country's increased focus on Gender-Based Violence and Femicide (GBVF) has brought about, or more so brought to light, several developments regarding the use of SAECKs including the rape kit crisis, the loss of funding for the FSL and the DNA sample backlog. Although South African law and policy relating to the use of SAECKs is extensive and has provided for the introduction of range of specialised structures and services, including the SAECK, it has not been responsive to the changing environment in which the kits exist. The same practice-related issues reported in the late 1990s have continued to hamstring the country's ability to respond to its sexual violence crisis and without the effective use of SAECKs, nothing will ever change.

1.2. Research focus & value

Although there are several gaps in the South African criminal justice system, the ineffective use of SAECKs is one that demands urgent attention. The last two decades have seen the introduction of a range of specialised services yet the country's conviction rate remains concerningly low. SAECKs were designed to aid in the investigation and prosecution of sexual assault cases. If existing policy providing for rape kit best practices could be changed or expanded to allow for the more effective use of SAECKs, survivors would have increased access to justice.

Local research on SAECKs is limited both in quantity and scope. Any recommendations for related best practices would, therefore, benefit from looking to international literature for guidance. Considering the quickly growing FSL backlog, swift and strategic action is imperative. In order take such action, this study aimed to systematically search for and identify international rape kit best practices and examine their implications for the South African environment. Not only would this point to key areas for maximum system improvement but it would also identify areas wherein future research should be conducted.

1.3. Research question, aims and objectives

The research question for this study was what are the international best practices for rape kits? The research sub-question was thus, what are the implications of international rape kit best practices for the South African environment?

In addressing the research question, this study ultimately aimed to make evidence-based recommendations for SAECK policy and future research. To achieve these aims, this study systematically searched for and identified literature according to the research question as well as predetermined inclusion parameters. After this, evidence was identified and synthesised. Findings were mapped and interpreted according to key themes inferred from the literature, then contextualised for the South African environment. Recommendations for local best practices, through policy and future research, were also made.

1.4. Summary of chapters

Chapter 1 introduces the research study, provides a background to the use of rape kits and related issues in the South African context as well the study's research questions, aims and objectives.

Chapter 2 provides a narrative summary of current literature relating to the availability, utility, and perceived value of rape kits in both local and international environments. This section identifies and discusses the key challenges currently facing the country with a particular focus on the disconnect between policy and practice. It also sets out the legal and policy framework shaping the country's response to sexual violence, including the development of a range of specialised structures.

Chapter 3 sets out the methodology employed, and research activities conducted in the study. This chapter discusses the guiding principles of a semi-systematic literature review as well as the process of thematic analysis, using a hybrid coding system. It also lays out the specific search parameters and screening criteria used to yield the literature included in the review.

Chapter 4 presents the findings from the eligible literature yielded by the searches. Here, both the results from the searches themselves as well as those in terms of recommendations made for best practices by the included literature are identified.

Chapter 5 discusses the implications of the international rape kit best practices identified from the yielded literature for the South African context. Recommendations are synthesised according to key themes and areas determined to be most in need of improvement and therefore, those in which action would be most effective, identified.

Chapter 6 concludes this study, summarises the key findings of the research in terms of rape kit best practices and makes recommendations for related policy and future research in South Africa.

Chapter 2: Literature review

2.1. Medico-legal evidence in sexual assault cases: the rape kit

Due to the violent and interpersonal nature of sexual assault, rape cases rarely have witnesses, with the survivor's body most often serving as the primary crime scene. Therefore, the prosecution of such cases relies heavily on two types of evidence: oral evidence such as testimony, and medico-legal evidence. Testimony can be given by the survivor, the perpetrator, or a witness, including an expert witness such as a medical forensic examiner or investigating officer. The purpose of collecting medico-legal evidence is to prove, or exclude, a physical connection between individuals and objects or places (Du Mont & White, 2007). Medico-legal evidence includes biological samples, clothing collected from the survivor, reported presence of injury and medico-legal documentation. In sexual assault cases, medico-legal evidence is collected in a rape kit.

The rape kit was first introduced in the 1970s in Chicago by a victim advocate and sexual assault survivor, Martha Goddard, who proposed the 'tool' to Louis R Vitullo who subsequently developed the 'Vitullo Kit' (Shelby, 2018). This kit was created with the explicit purpose of ensuring the standardised collection of medico-legal evidence and in turn, assisting in the investigating and prosecution of sexual assault cases. The Vitullo Kit was distributed to 25 hospitals in the Chicago area for a pilot project in 1978. By the end of the following year, approximately 3000 rape kits had been turned over to crime laboratories for analysis. In 1980, the Chicago Police Department's homicide/sex division reported that officers were obtaining 25% more prosecutable evidence from emergency rooms using the kits (Brodt, 1980; Shelby, 2018). Since then, the use of rape kits has expanded beyond the US and now forms part of post-rape forensic practice internationally, including countries such as South Africa, the United Kingdom (UK), Canada, Australia, and New Zealand.

Although the contents of the kits vary by country, they typically include detailed instructions for the healthcare provider conducting the examination and forms for documenting the procedure, evidence gathered and presence of ano-genital injuries (Campbell & Fehler-Cabral, 2018). Although research has emphasised that rape kits are collected whenever a survivor presents to a healthcare facility, it is recommended that kits are collected within 24 – 72 hours after the incident to obtain as much

biological evidence from the survivor's body as possible (NIJ, 2017). Kits also typically include tubes and containers for blood and urine samples, paper bags for clothing collection as well as other physical evidence, swabs for biological evidence, a large paper sheet on which the victim undresses to collect hairs and fibres, floss or wooden sticks for fingernail scrapings, glass slides, saline water, and finally, envelopes, boxes, and labels for each of the various stages of the examination (NIJ, 2017).

In South Africa, rape kits have undergone several revisions since their introduction in 1992. Sexual Assault Evidence Collection Kits (SAECKs) were first launched in 2000 and have subsequently been modified several times (Jina et al, 2011; Martin, 2002). These kits were developed with the intention of improving the collection of medico-legal evidence by making the tool as user-friendly as possible to allow for better quality evidence collection, especially by healthcare providers who may not have received specialised training (Du Mont & White, 2013; Jina et al., 2011, Jina, 2015).

Prescribed by the *National Directives and Instructions on conducting a Forensic Examination on survivors of Sexual Offence cases* (2009), the following samples are to be collected from a sexual offence patient: an oral specimen, clothing, evidence on the patient's body, fingernail clippings, saliva on the skin, semen or other stains on the body, head hair, a pubic area specimen, an ano-rectal specimen, a genital specimen, and a reference blood sample as per instruction in the SAECK. This includes two duplex paper bags for the collection of the patient's underwear, a sanitary pad if one is worn, an evidence collection box for the collection of a tampon, three cotton tipped sterile swabs for evidence swabbing, a vial of sterile water to moisten the swabs, three boxes for storing used swab samples and desiccants to keep the samples dry. The kit also contains evidence sealing bags and tamper evident seals to ensure the chain of custody is maintained and prevent potential contamination (Jina et al., 2011; Acino Forensic, n.d). Also included is a quick reference instruction pamphlet as well as a documentation form, titled the J88, for record keeping.

The J88 provides instructions for the healthcare provider conducting the medical forensic examination and guides the collection of required samples for the SAECK (Jewkes et al., 2009). Evidence documented in the J88 includes observations

about the survivor at the time of the examination such as their sobriety as well as physical and emotional state. It also documents the presence of injuries both on the survivor's body generally as well as in the ano-genital region. Any biological specimens or items of clothing collected for DNA analysis are also to be noted.

The movement of the SAECK through the criminal justice system as well as the respective roles and responsibilities of each department are typically the same in South Africa as those provided for internationally. Rape kits are collected by a medical forensic examiner through a medical forensic examination (NIJ, 2017; Jina et al., 2011). Collected kits are transferred to a law enforcement officer who is responsible for submitting the kit to a forensic science laboratory for analysis, conducting the investigation and following up with the survivor. If a suspect has been identified, a reference sample, most often in the form of a buccal swab, is collected (NIJ, 2017; Magalhaes, 2015; SAPS National Instruction, 2008). Upon analysis, the laboratory produces a report which, alongside the medico-legal documentation form, provides evidence for use in court (NIJ, 2017; Jewkes et al., 2009).

After analysis, eligible DNA profiles are uploaded onto a national DNA database. Such databases have been established in the United Kingdom (UK), the United States (US), Canada, Australia, and New Zealand (Meintjies-van der Walt, 2008). The National Forensic DNA Database (NFDD) of South Africa came into effect in 2013 (de Wet, Oosthuizen & Visser, 2011). DNA databases have the ability to produce a match between an identified suspect and DNA evidence collected as part of a rape kit. They are particularly valuable in identifying patterns of serial offending by matching one DNA profile to several others collected from survivors or crime scenes (Meintjies-van der Walt, 2008; de Wet, Oosthuizen & Visser, 2011).

Kits are required to be stored by law enforcement for a certain period of time prescribed by a statute of limitations, after which all samples are to be disposed of (NIJ, 2017). This is where South Africa most differs to international protocols. South Africa's statute of limitations, locally referred to as a 'prescription', which previously gave survivors 20 years to report a rape was recently repealed (Thorpe, 2017). This lifts the time limit placed on survivors to report and enables all sexual offences, regardless of when they were committed, to be evaluated according to available

evidence (Thorpe, 2017). SAECKs are thus no longer required to be disposed of after a certain period of time.

Key to the effective use of rape kits is the establishment of a secure chain of custody to prevent collected evidence from being comprised before analysis and possible use in court (Du Mont & White, 2013). The 'chain' refers to the process of collecting, preserving, and conveying evidence through accountable tracking mechanisms as it moves from the health facility to law enforcement (Ajema et al., 2009). This involves the labelling, signing, and dating of evidence by key personnel, including a law enforcement officer and healthcare provider, upon transfer and retrieval. Without such documentation, evidence is considered inadmissible in court (Du Mont & White, 2013; Mogale et al., 2015).

2.2. The impact of rape kits on the progression of sexual assault cases

It is widely held that the use of rape kits can increase the likelihood that evidence collected may assist in sexual assault investigation, resulting in perpetrators being held accountable and preventing further sexual violence from occurring (White & Du Mont, 2009; US DoJ, 2004). International research found that a sexual assault case was most likely to result in a positive legal outcome if the survivor was willing to undergo a medical forensic examination and if ano-genital injuries were present and documented (Du Mont & White, 2007). The presence of DNA evidence, however, was not found to significantly contribute to the successful legal outcome of cases. Notably the action of collecting and analysing DNA evidence increased the likelihood of an arrest and of a case being presented to the prosecution (Alderden, 2008; Bouffard, 2000; Ingemann-Hansen et al., 2008).

Researchers reported that a survivor's willingness to undergo an examination made them appear more credible to the investigating officer while the presence of ano-genital injuries resulted in the officer perceiving the incident as being more severe. Perceptions of victim credibility and the severity of an incident, determined by the presence of injuries, are often informed by stereotypical assumptions regarding what constitutes 'real' rape. These assumptions include the belief that women often fabricate rape charges, and that rape involves a stranger, the use of physical force, and results in visible injury (Du Mont & White, 2007; Jordan, 2004; Suarez & Gadalla, 2010).

Du Mont and White (2007) reported a positive association between successful rape case outcomes and the documented presence of ano-genital injuries but no such association between successful outcomes and DNA evidence found in semen, sperm, or saliva. Similar findings were reported by McGregor, DuMont & Myhr (2002), who concluded that the presence of injuries was associated with the filing of charges. Although a similar finding was reported with regards to biological samples, it was noted that the association was irrespective of the DNA analysis results and that in many of the cases included in the study, charging occurred before the collected samples were even analysed. This points to the consideration that it is the action of collecting medico-legal evidence and therefore, the undergoing of the medical forensic examination, rather than the evidence itself that has an impact on these cases. This was echoed by several other authors, all of whom reported that although forensic evidence had little impact on conviction, the undergoing of the medical forensic examination contributed to the clearance of the case (Alderden, 2008; Bouffard, 2000; Ingemann-Hansen et al., 2008).

Locally, there is minimal research on the impact of medico-legal evidence on the progression of sexual assault cases. Although the available studies are unable to provide a comprehensive picture of the association between SAECKs and rape case outcomes, this is not solely due to the limited scope or quantity of research. Studies that have explored this association have reported that FSL reports from DNA analysis were almost never available for use in court and that, although J88s were regularly submitted, the quality of completion was consistently poor (Jewkes et al., 2009; Machisa et al., 2017; Vetten et al., 2008). Poorly completed J88s are considered inadmissible as evidence and/or are simply not used by court personnel. Critical information regarding the presence of ano-genital injuries was, therefore, often either unavailable or could not be used due to poor documentation (Machisa et al., 2017; Mogale et al., 2015).

While the immediate value of DNA evidence in sexual assault cases is reportedly minimal, possibly as a result of practice-related factors such as inadequate collection, failure to submit and untimely analysis, its value should be considered in addition to its potential to populate DNA databases (Johnson et al., 2012). This is especially important for South Africa, considering its high rates of violent crime and serial sex offending (De Wet, 2009).

2.3. South African law and policy relating to SAECKs

2.3.1. Overview of the legal landscape

The *Criminal Law (Sexual Offences and Related Matters) Amendment Act 32 of 2007* (SORMA) is the overarching legislation regarding sexual offences in South Africa. The Act is the legislative framework that enables the enactment of obligations placed on the state in respect of survivors of sexual offences by the South African Constitution as well as several international and regional instruments (FDP, 2016). The Act sets out requirements for co-ordinated post-rape service delivery, placing a significant amount of responsibility on government departments to deliver appropriate, adequate, and efficient services to all survivors of sexual violence (Frank, 2007; Machisa et al., 2017). The Act requires the establishment of a range of specialised services for survivors including forensic services such as the collection, submission, and analysis of SAECKs (Machisa et al., 2017). The *Service Charter for Victims of Crime* (2004) clarifies the service standards that can be expected by survivors when engaging with the criminal justice system. The *National Policy Framework for the Management of Sexual Offences Matters* (2012), provides for the collaboration between different state departments to ensure the proper use of SAECKs (MATTSO, 2013).

2.3.2. The National Directives and Instructions on conducting a Forensic Examination on survivors of Sexual Offences cases, No 223 of 2009

The *National Directives and Instructions on conducting a Forensic Examination on survivors of Sexual Offence cases* (the Directives) set out standardised procedures for conducting forensic examinations on sexual offence survivors in all health facilities in South Africa. They are to be read with the Department of Health's (DoH) *National Sexual Assault Policy, National Management Guidelines for Sexual Assault Care*, the *Victims' Charter*, and the *National Health Act* (Machisa et al., 2017). The Directives were designed to ensure the provision of a full range of services to survivors by healthcare providers including administering Post Exposure Prophylaxis (PEP) and conducting the medical forensic examination. Directive 5, specifically, sets out the way in which healthcare providers are required to aid in the investigation and prosecution of sexual offences.[1]

[1] See the Directives (2009) for further detail regarding Directives 1, 2,3 and 4.

Directive 5 requires that a SAECK be used when conducting the medical forensic examinations in sexual offence cases. The medical forensic examination is to be conducted by an experienced forensic healthcare professional and the collection of evidence should immediately follow the examination, however, medical treatment takes precedence. In terms of medico-legal documentation, informed consent must be obtained and the SAP308 consent form completed prior to the examination.[2] The examiner is required to take a comprehensive patient history and complete required documentation including the J88. Collected specimens must be properly packaged and transferred to the investigating officer.[3]

To maintain the chain of evidence, 'access to confidential information contained in the J88 is legally privileged to the investigating officer as well as the National Prosecuting Authority'. The original J88 form must be given to the investigating officer and a copy kept in the patient's file for record purposes and subsequent court proceedings. If the investigating officer is not present to retrieve the SAECK and forms, they are to be marked by the healthcare provider and safely stored. 'The transfer of the SAECK from official to official should be recorded and confirmed by the signature or statement by the recipient'. [4]

2.3.3. The SAPS National Instruction 3 of 2008

The *SAPS National Instruction 3 of 2008* (the Instruction) was developed, in accordance with the SORMA (2007), to ensure that the SAPS render a professional post-rape service to survivors. The Instruction sets out the roles of responsibilities of the SAPS personnel and requires that sexual assault investigations be carried out in a way that is informed by and sensitive to the nature of such cases (Machisa et al., 2017). This involves the provision of specialised services by the SAPS FCS Units and FSLs.

The Instruction states that all reports of an alleged sexual offence must be taken seriously and that sufficient particulars are to be obtained from the survivor, a docket must be opened, registered on the Crime Administration System (CAS) and

[2] Informed consent entails sufficient information being provided to the patient to make an informed decision and that the patient actually understands the information and the implications of acting on this information (Chima, 2013)
[3] See Section 19 of the Directives (2009) for further detail regarding the investigations and the examination of sexual offences patients.
[4] See Section 28 the Directives (2009) for further detail regarding maintaining the chain of evidence.

that an affidavit must be made with a set of specific criteria.[5] The SAPS member must ensure that available evidence is preserved, as far as possible, until the medical forensic examination has been conducted. The survivor must be taken, by the investigating officer, for the medical examination as soon as possible, even if the sexual offence was reported more than 72 hours after it was committed. The investigating officer is also responsible for completing a SAPS 308 form stating all relevant details of the sexual offence as well as supplying a J88 form and the relevant evidence collection kit to the healthcare provider. They are also required to ensure that collected samples are submitted to the FSL within seven days of collection. [6]

Reference samples obtained from the body of the suspect are used to link the suspect and the offence. If a suspect has been identified and it is deemed necessary for the proper investigation of the case, the investigating officer must ensure that they are taken for a medical examination, which is to be conducted by an accredited healthcare provider. Again, they are responsible for supplying a J88 and ensuring that all necessary samples are taken and submitted to the FSL without delay.[7]

Section 17 prescribes for the prevention of exhibit contamination. It states that a SAPS member who is not trained or experienced in the gathering, handling, storing, and transporting of evidence, must not gather, handle, store, or transport evidence. The section also provides a set of criteria to prevent the contamination of exhibits, including the loss of evidence from both the survivor and the suspect, and the ways in which to secure this. In terms of preparation for court proceedings, the Instruction states that the investigating officer must keep the survivor informed of any developments in the investigation of the case.[8]

[5] See Section 4 of the Instruction (2008) for further detail regarding receiving a report of a sexual offence at a police station.
[6] See Sections 9 and 10 of the Instruction (2008) for further detail regarding the role of the investigating officer and medical examination of the victim.
[7] See Section 16 of the Instruction (2008) for further detail regarding the medical examination of the suspect.
[8] See Sections 17 and 21 of the Instruction (2008) for further detail regarding preventing contamination of exhibits and preparation for court proceedings.

2.3.4. The Criminal Law (Forensic Procedures) Amendment Act, 37 of 2013 and the Forensic DNA Regulations, 2014

The *Criminal Law (Forensic Procedures) Amendment Act 37*, also referred to as the 'DNA Act', makes provision for the use of forensic DNA profiles by the SAPS in the investigation of sexual assault cases. In addition to this, the Act provides for the establishment of the National Forensic DNA Database (NFDD) as well as the populating of the database using DNA profiles, which falls under the responsibility of the SAPS FSLs. The *Forensic DNA Regulations* (2014) (the Regulations) fall under Section 6, Chapter 5B, of the DNA Act (2013), and provide for the establishment, administration, and maintenance of the NFDD.

The Act states that the 'detective commander or designated person must ensure that every bodily sample collected is submitted to the FSL for examination within 30 days of collection'. It also provides for the taking of a buccal reference sample using a DNA reference (buccal) collection kit as well as the taking of fingerprints when the sample is taken from an arrested person or from a person for investigative purposes.[9]

In terms of testing, 'a SAPS official or an official of the court must request, in writing, that an examination be conducted, and findings be made on exhibit material submitted to the FSL'. Should the court date be available at the time of submission, it must be indicated in the covering letter accompanying the exhibits. The forensic analyst should then analyse DNA profiles obtained from the SAECK and make findings in the case. The investigating officer must be informed of this result and the report is to be included in the police docket. [10]

The Regulations (2014) provide for the prioritisation of certain exhibits. Section 7 (3) states that 'DNA casework with fixed court dates and with known suspects must be prioritised and completed within the timeframe as agreed upon with the prosecutor'. Testing in cases of serial offending should be also prioritised and completed within 30 days after DNA reference samples have been confirmed or multiple cases are linked. DNA profiles are to be submitted for loading onto the NFDD within 30 days after the case has been received. Section 10 of the Regulations

[9] See Section 4 of the Regulations (2014) for further detail regarding the preservation and timely transfer of collected samples to the Forensic Science Laboratory.
[10] See Section 6 of the Regulations (2014) for further detail regarding communication of DNA findings and related information.

(2014) prescribes for the disposal of reference buccal samples within 30 days after a DNA profile has been obtained.

2.4. Specialised interventions in post-rape service provision

Historically, South Africa's response to rape has been poor, with medico-legal evidence frequently being unavailable or too poor quality (Human Rights Watch, 1995; Machisa et al., 2017; Vetten et al., 2008). The state recognised the need for improved service provision both within and between governmental departments and in response, developed a set of interventions, including the introduction and restructuring of specialised post rape services. These include the SAPS Family Violence, Child Protection and Sexual Offences (FCS) Unit, the accreditation system for medical forensic examiners, the SAPS Forensic Science Laboratories (FSLs) as well as the Thuthuzela Care Centre model and linked Sexual Offences Courts.

2.4.1. Accreditation for healthcare providers

According to the Directives (2009), survivors reporting sexual assault cases at police stations should be referred to a public health facility, where an accredited healthcare provider should conduct a medical forensic examination, collect the SAECK and document all findings in the J88 form. These healthcare providers are also responsible for serving as expert witnesses in court, where they may be required to give an account of their observations and interpretation as documented in the J88.

Traditionally, medical forensic examinations were conducted and SAECKs collected by state-employed district surgeons, usually general practitioners (Martin, 2002). These surgeons were hired, typically on a contractual basis, to perform all necessary clinical medico-legal procedures including but not limited to the examination of drunk drivers, prisoners, persons with disabilities, and military pension applicants in addition to survivors of sexual assault (Martin, 2002). Although the purpose of the medical forensic examination was clear, no formal training was given to any doctor who applied for the contract (Martin, 2002). To address concerns of the poor quality of and lack of access to medico-legal services, they were relocated to designated health care facilities and the district surgeon system was abolished (Martin, 2002).

As per the *National Health Act* (2003), clinical forensic examinations are now only to be conducted by authorised or accredited health officials such as medical

practitioners and nurses trained in clinical forensic medicine. These practitioners are required to be registered with the Health Professions Council of South Africa or the Nursing Council of South Africa and have successfully completed a training programme or course as formulated by a national accreditation body.

2.4.2. The SAPS Family Violence, Child Protection and Sexual Offences (FCS) Units

The SAPS FCS Unit is a specialised unit created to fight against sexual offences against adults and children (SAPS.gov.za, n.d). The unit was first established in 1986 but broadened its mandate in 1995 to operationalise the SAPS policy of prioritising the combatting of violence against women and children (Frank et al., 2008). In 2006, the unit underwent a national restructuring, which involved the shifting of a wide range of services positioned at 'area' level, downwards to station or provincial level to increase survivors' access to specialised services (Frank et al., 2008; Vetten et al., 2008).

As per the Instruction (2008), the investigating officer is responsible for conducting a thorough investigation in every case of an alleged sexual offence. This includes opening a case, conducting an interview, and taking the survivor's statement. The investigating officer is also responsible for taking the survivor to a designated health care facility for medical examination, with their consent, supplying the J88 form and SAECK to the accredited health care professional as well as ensuring that the collected samples are submitted to the FSL within seven days. The same applies for the collection of a reference sample from an identified suspect (SAPS Instruction, 2008). In terms of case follow up, the investigating officer is required to keep the survivor informed of any developments regarding their case (SAPS Instruction, 2008).

2.4.3. The SAPS Forensic Science Laboratory

The SAPS Forensic Science Laboratory (FSL), which falls under the Criminal Record and Forensic Science Service (CRFSS) division, was first formed in 1971 with the main laboratory being situated in Pretoria (Meintjies-van der Walt, 2008). Now, decentralised offices are established in Cape Town, Port Elizabeth, and Durban. With regards to SAECKs, the responsibility for DNA analysis lies with the FSL's Biology Unit. Although the FSL is not currently an accredited laboratory, it has developed a Quality Management System (QMS), which is in line with and adheres to internationally accepted standards (Meintjies-van der Walt, 2008; Whitfield, 2020).

Through this, results can be proved as credible. The accreditation status does not prevent the FSL from providing services as courts of law will evaluate submitted evidence and decide its acceptability on a case-to-case basis (Whitfield, 2020).

The *DNA Act* (2013) and the *Forensic DNA Regulations* (2014) set out provisions for the use of DNA profiles by the SAPS and the FSL in the investigation of sexual assaults as well as the establishment of the NFDD and the procedures by which it is to be populated. As per the Act, the FSL is responsible for all procedures surrounding the processing of SAECKs. FSL forensic analysts are required to analyse DNA profiles derived from all samples collected and make findings in the case. Testing can only commence once a request for such is received from a SAPS official or an official of the court. The FSL is also responsible for ensuring that DNA profiles are submitted for loading onto the NFDD within 30 days after the receipt of the case. Furthermore, all casework must be completed within target dates agreed upon with the investigating officer.

All information relating to evidence received by the FSLs is stored in the Exhibit Management System (EMS) and can be retrieved at any time, allowing for SAECKs to be tracked through the laboratory system (van der Walt & Luke, 2008). The laboratories perform regular checks to ensure that the storage, handling, and analysis of evidence is done according to pre-determined standards as well as that samples have not been misplaced or gone missing. Stock verifications are also conducted on a quarterly basis (van der Walt & Luke, 2008). This is important as SAECKs are now retained indefinitely and not disposed of as per the previous statute of limitations, or prescription, of 20 years (Thorpe, 2017).

2.4.4. The Thuthuzela Care Centre Model

The National Prosecuting Authority (NPA) developed the Thuthuzela Care Centre (TCC) model in response to the poor state of post-rape services in South Africa (Vetten, 2015). These centres were designed with the intention of providing an integrated, specialised, and survivor-friendly service to reduce secondary victimisation, increase conviction rates and reduce the length of time taken to finalise cases (Vetten, 2015; Shukumisa, 2017; Smith & Mafani, 2013). This includes the improved collection and handling of SAECKs in order to better assist with the investigation and prosecution of sexual assault cases.

The model is dependent on the collaborative efforts of several stakeholders: The Department of Health (DoH) provides a medical forensic examiner for medico-legal services, including the collection of SAECKs, whilst the SAPS provides FCS officers for supplying the SAECKs, submitting collected SAECKs to the FSL and conducting investigations. The National Prosecuting Authority (NPA) and Department of Justice and Constitutional Affairs (DoJ&CA) assist with prosecutorial services and the Department of Social Development (DSD), along with non-governmental organisations (NGOs), provide psychosocial support (Vetten, 2015; Shukumisa, 2017; Smith & Mafani, 2013). However, due to the collaborative nature of the model, it has not been legislated. The roles and responsibilities of each state role player are, therefore, prescribed by their respective policy and legal frameworks including the Health Directives (2009), SAPS Instruction (2008) and DNA Act (2013).

TCCs offer 24-hour service, seven-days a week and are linked to Sexual Offences Courts (SOCs). SOCs are one of the country's specialised post-rape service innovations and are considered as an international best practice model (MATTSO, 2013). Although having courts staffed with specialised personnel who are trained to make informed court decisions or judgements, while being sensitive to the needs of rape survivors, play a crucial role in ensuring justice for survivors, they do not directly impact the quality of medico-legal evidence provided by the SAECKs.

2.5. Key issues affecting the effective use of SAECKs in South Africa

Considering that SAECKs were designed to contribute to building stronger, more prosecutable sexual assault cases, the consistently low rate of convictions for such cases in South Africa raises concern about whether SAECKs are being effectively utilised. Local research has reported substantial flaws regarding the use and subsequent impact of SAECKs on the progression of sexual assault cases. Issues have been identified at every stage of SAECKs' movement through the criminal justice system. Research has consistently reported several key problems including the inadequate collection of medico-legal evidence by healthcare providers, the failure to submit collected SAECKs for analysis by law enforcement and the inability of the FSL to process the SAECKs in a timely manner due to the DNA backlog (Machisa et al., 2017; Vetten et al., 2008; Omar, 2008; Waterworth, 2020). Although these issues are not unique to South Africa, local research has attributed to them to a range of context-specific factors.

2.5.1. Access to and availability of specialised services

South Africa has pioneered a range of specialised post-rape services, particularly the TCC model, yet these are not always accessible nor available to survivors across the country, particularly those living in more rural areas. Although TCCs have strengthened South Africa's response to sexual violence, especially regarding the improved collection of SAECKs, there are currently only 55 TCCs in the country, the majority of which are based in urban areas (FDP, 2016; RTI, 2012). Many survivors, therefore, do not have access to the specialised services offered by these centres and are left to have a SAECK collected at the nearest health facility, usually a public hospital (Machisa et al., 2017; Shukumisa, 2017). Machisa et al (2017) reported that only 30% of SAECKs nationally were collected in specialised centres, such as the TCCs, whereas 53.3% were collected at public hospitals. The remaining 16.7% were collected at local clinics, private medical practices, or police stations.

Although evaluations have found that the TCCs are generally well functioning and have contributed to the improved use of SAECKs, the availability and quality of services vary across and within provinces (FDP, 2016). One of the model's greatest strengths, the multi-sectoral approach, is also one of its greatest weaknesses. Not all state role players are equally involved in service provision and as the model is not legislated, there is no way to ensure accountability when survivors' rights are not upheld, and they are treated poorly (FDP, 2016).

2.5.2. Inadequate training

Healthcare providers

SAECKs, as with rape kits globally, were designed with the explicit purpose of ensuring the standardised collection of medico-legal evidence and were created to be easily collected by healthcare providers working outside of specialised spaces (Shelby, 2018). Local research, however, has reported that large quantities of SAECKs were not being properly collected and accompanying J88 forms were rarely completed and consistently provided poor quality information, particularly regarding the presence of ano-genital injuries (Machisa et al., 2017). One study found that not a single SAECK in the sample pool had all of the specimens collected whilst less than 25 % had all three genital specimens collected and not a single aspect of administrative quality had 100% compliance (Jina, 2015). The inadequate collection of medico-legal evidence by

healthcare providers has been cited as a contributing factor to the FSL backlog as poor-quality evidence and incomplete SAECKs create an unnecessary burden for analysts and negatively impact the FSL's processing capacity (Omar, 2008).

As per the *National Health Act 61* (2003), clinical forensic examinations are to be conducted by accredited healthcare providers who have successfully completed a specialised training programme. A national situational analysis, however, found that only a third of healthcare providers who had collected SAECKs had undergone training on how to do so (Christofides et al., 2005). Another reported that 72% of the healthcare providers had collected SAECKs but only 35% received training on the provision of post-rape forensic services (Brouwer, 2008).

Since 1994, South Africa has undergone significant changes in its post-rape healthcare service provision. Upon the restructuring of the district surgeon system, several challenges were identified. An evaluation of post-rape healthcare services, including the collection of SAECKs, for adult survivors at 26 medico-legal centres in Gauteng reported that in terms of accountability, various sectors had not consistently applied their reform efforts across the province and had faced a chronic lack of human and financial resources (Suffla et al., 2002). When the old system began to be phased out, it underwent revision without taking the necessity for formal training into account. As a result, there is an overwhelming amount of healthcare providers, without specialised training, performing medical forensic examinations and providing post-rape health care to survivors (Christofides et al., 2003).

In South Africa, forensic nurse examiners are also considered as 'accredited healthcare providers', however, the University of the Free State is currently the only tertiary institution offering a forensic nursing qualification (Sebaeng & Duma, 2017). Although forensic nurses who have undergone this programme are considered as fit to provide medico-legal services, collect SAECKs and provide testimony in court, the qualification remains unaccredited with the Nursing Council of South Africa. Formal recognition of these nurses and their legal ability to provide the full range of services, including providing testimony in court, therefore, varies significantly between provinces (Sebaeng & Duma, 2017).

SAPS officials

Local research has reported that SAPS officials, including those working under the specialised FCS unit, are not adequately trained. Considerable resources have been invested into establishing a system that could enable the use of DNA in rape cases, yet it is not operating properly (Jewkes et al. (2009). Christofides et al. (2003) reported that investigating officers were either bringing the wrong SAECK to healthcare facilities or no kit at all. There have also been instances where the investigating officer provided a SAECK that had been previously used (Blaas, 2004).

As per the Instruction (2008), the SAPS investigating officer is required to ensure that the samples are forwarded to the FSL within seven days of collection. Furthermore, if a suspect has been identified, they are also responsible for ensuring that all necessary reference samples are taken and that they are forwarded to the FSL without delay. However, Jewkes et al. (2009) reported that of the 951 adult rape cases analysed, 91.3 % had a SAECK collected but in only 69.3 % was a SAECK sent to the FSL. Therefore, in 24 % of the cases where a SAECK was collected, the kit was never sent for analysis. Furthermore, the suspect's blood was only obtained for DNA analysis in 8.9 % of cases and a DNA report was received from the FSL in only 1.1 %, making them rarely available for use in court (Jewkes et al., 2009). Similarly, Vetten et al. (2008) reported that a SAECK was completed in 67 % of analysed cases but only 51 % were submitted to the FSL. Again, the suspect's blood was only taken in 16.4 % of cases (Vetten et al., 2008). Machisa et al. (2017) reported that out of 3953 rape cases, a SAECK was appropriately collected in 72.1 % rape cases but that just over a fifth of these were never submitted to the FSL for analysis.

The SAPS' failure to submit collected SAECKs has been attributed to several factors but most prominently, the exercising of discretion by investigating officers. Such discretion is reportedly exercised according to information provided by the survivor about the incident as well as that which is documented in the J88 form and is based on stereotypical and patriarchal assumptions regarding what constitutes 'real' rape and survivor credibility (Machisa et al., 2017; Vetten, 2016). Therefore, although the SAPS established the FCS unit to provide specialised services to rape survivors, it is evident that this 'specialised' training does not adequately address the attitudes from

which such assumptions were based (Christofides et al., 2003; Machisa et al., 2017; Vetten, 2016).

Another training-related issue is the lack of requests for DNA analysis being submitted to the FSL as is required by the DNA Act (2013) for the testing of exhibits. This has been identified as one of the contributing factors to the current SAECK backlog (Omar, 2008). A local study reported that of 35 241 cases received by the FSL, only 6984 requests for DNA analysis were received (Omar, 2008). As a result, many cases remained unanalysed and have to be stored in laboratory refrigerators.

2.5.3. Weak intersectoral collaboration

The progression of a sexual assault case relies on the successful collaboration between different stakeholders (Du Mont & White, 2007). This is both in terms of performing respective duties but also ensuring that intersectoral interactions, such as the transferal of evidence, is realised. The need for intersectoral collaboration has been emphasised in almost all South African law and policy relating to sexual offences and is entrenched in the structure of the TCC model, which has been praised for its innovative multi-disciplinary approach (FDP, 2016). However, the integration of services does not come without difficulties (Suffla et al., 2002).

In the absence of clearly defined criteria regarding issues such as role differentiation and training, the establishment of one-stop centres, such as the TCCs, may be negatively impacted in their efforts to improve access and quality of such services (Suffla et al., 2002). Local research found that the intersectoral relationships at the TCCs were functioning at a national level, but were dysfunctional at provincial, district and facility levels (FDP, 2016). According to respondents, there were role players who did not understand or execute their responsibilities as mandated. These misunderstandings about the roles of different stakeholders had led to conflict and delays in the operations of the TCCs, particularly when one role player was unable to take full responsibility for their actions. Considering these issues against the fact that these centres were designed to promote intersectoral collaboration raises concern regarding the quality of such collaboration outside of specialised spaces and the implications that this has on the use of SAECKs in cases of sexual assault. It is evident that current South African law and policy does not adequately account for these factors

and that without legalisation, the TCC model will continue to suffer from weak intersectoral collaboration (FDP, 2016).

2.5.4. Lack of resources and provincial discrepancies

The Department of Health

The use of SAECKs, as well as the criminal justice system more generally relies heavily on human labour and specialised equipment (FDP, 2016). The South African criminal justice system has long been challenged by limited resources (Ernstzen et al., 2019). A combination of a severe lack of resources and the country's high rates of disease and violence creates a criminal justice system that is fragmented, under-resourced and over-burdened (Vetten, 2011). Furthermore, differences in the availability of resources between provinces present barriers to standardisation and prevent the consistent implementation of policy. Such issues are seen within and between all sectors, at every step of a SAECK's movement through the system.

The public healthcare system's capacity is stretched in its attempt to respond to a range of health crises, of which sexual violence is only one. Public healthcare facilities are typically understaffed, leaving available personnel to deal with heavy workloads (Suffla et al., 2002). The restructuring of the district surgeon system allowed for more healthcare providers to obtain the accreditation required to provide medico-legal services and therefore, increased access to such services for survivors. However, this decentralisation resulted in survivors not being prioritised when patients requiring emergency medical attention were present, thereby restricting prompt access to these specialised services (Suffla et al., 2002). This continues to be an issue with local research reporting that survivors have to wait several hours to receive treatment and have a SAECK collected (Christofides et al., 2003). It is evident that the restructured system has addressed certain issues while leaving others unresolved.

The TCC model

The TCC model faces similar challenges. In terms of human resource capacity, an evaluation of the TCCs reported that most centres did not have the full staffing complement as prescribed by the 'Blueprint' (FDP, 2016). Many of the centres reported a shortage of allocated health staff such as doctors and forensic nurses. Only 55 % reported having a professional nurse stationed at the facility whilst 66 % had a forensic nurse and 51.9 % had a doctor (FDP, 2016).

Furthermore, although most survivors who have made use of the model's services found them to be satisfactory, NGO stakeholders expressed concern regarding protocols not being followed and a lack of benchmarking to ensure that there is a standardised range of quality of services at all centres (Shukumisa, 2017). Protocols for managing patients and outlining roles and responsibilities were not always available and when they were, were often either not signed or outdated (Shukumisa, 2017). There is a varying interpretation of protocols due to a lack of common training (Shukumisa, 2017). In terms of basic equipment required for a medical forensic examination, local research found that 75% of all TCCs reviewed either did not have the basic forensic equipment required for a forensic examination. Other TCCs either had broken equipment or did not use it (RTI, 2012). This impacts the health services delivered at the TCC, including the collection of SAECKs.

The SAPS FCS Unit

The SAPS is no stranger to the issue of limited capacity and has been under-resourced and over-burdened for decades (Vetten, 2011). This is evident in the weak investigation of sexual assault cases and poor handling of SAECKS that has been continuously reported over the years (Artz & Smythe, 2007; Vetten, 2011; Vetten et al., 2008). In a 2004 study involving three SAPS stations, researchers reported that detectives were carrying anything between 27 and 200 dockets for all types of crimes each, with one detective being responsible for 178 cases of sexual assault alone (Artz et al., 2004). According to Stanton et al. (1994), the maximum number of dockets any detective should ideally be investigating at one time is approximately 20. The SAPS' capacity to respond to the country's sexual violence crisis was further decimated by the decision to restructure its FCS Unit in 2006 (Vetten, 2011).

The consequences of this restructuring were highly contradictory: areas which previously had not received FCS services begun receiving them but, in turn, others lost access to such services and all within the context of a decline in quality of services overall (Frank et al., 2009). Existing networks between FCS detective and other state role players disintegrated and sexual assault investigations were now being allocated to both FCS and general SAPS detectives (Vetten et al., 2009). Inexperienced SAPS officers were brought in to undertake investigations for which they were not specially trained, resulting in untrained officers making critical decisions regarding the progression of a case such as whether to submit a SAECK for analysis (Vetten et al., 2009). Although this may present as a training issue, there is no point in providing specialised training to FCS officers if they simply do not have enough manpower to handle all sexual assault cases.

The SAPS FSL

For the last twenty years, the FSL backlog has been consistently growing. The sudden and significant increase in unprocessed SAECKs was caused by the loss of funding in 2018 (Waterworth, 2020). The laboratory's operations have since come to a halt as it simply has no consumables nor maintenance contracts in place to operate effectively, if at all (Waterworth, 2020). This can be seen in the 2020/2021 SAPS Annual Performance Plan, which shows a consistent decrease in the total expenditure by the FSL (SAPS, 2020). The report shows a decrease of R500 million per year from 2016/2017 to 2018/2019, with an average growth rate of -12 % between 2016/2017 and 2019/2020. The expenditure estimates for the FSL for the next three years predict an average growth rate of only 4.9 % and make up a mere 7.3 % of the SAPS's total expenditure (SAPS, 2020). These figures are the lowest amongst of the SAPS' subprogrammes.

Local research has also reported that the capacity of the SAPS Criminal Record and Forensic Science Service (CRFSS), as whole, is a serious challenge. The FSL Biology Unit, in particular, suffers from high turnover and poor retention of staff. This exacerbates the delays in the processing of DNA samples and therefore, the rape kit backlog (Omar, 2008). The CRFSS training is of a notably high standard, however, the cost of training per analyst is exorbitant, and sat at around R450 000 per analyst when reported in 2008 (Omar, 2008). This would translate to approximately R860 500 in

2021. The SAPS is unable to offer a competitive remuneration package for specialist analysts nor does it have a reasonable promotion policy (Omar, 2008). This makes the position unattractive and has resulted in a high rate of staff turnover with analysts either leaving South Africa to work in foreign countries or being lured by other governmental departments, such as the Department of Health, who offers a salary twice that of SAPS (Du Toit, 2007; Omar, 2008).

2.6. Summary of literature

Existing research has shown that rape kits have advanced post-rape forensic practice and ultimately, contributed to increased conviction rates. However, the extensive accumulation of these kits seen in local and international backlogs points to the reality that these kits have yet to realise their full potential as a specialised post-rape 'tool'. Furthermore, everything currently known about rape kits and their impact on the progression of sexual assault cases is relatively new as the most relevant research has been conducted in response to the discovery of these backlogs, which only began approximately 15 years ago. Ideally, policy should change as new research emerges, but it is evident from the literature that many of the legislative frameworks providing for rape kit practices are outdated.

With international rape kit research only beginning to emerge and gain traction, the volume and scope of local research on the topic leaves much to be desired. South Africa has developed an extensive range of legislation relating to sexual offences, particularly in terms of specialised post-rape services, however, the same practice-related issues that were identified over two decades ago continue to hamper the criminal justice system's ability to effectively use new and innovative tools, such as the SAECK. Although many of these issues are shared with other countries, the lack of local knowledge leaves South African policy makers unequipped to make the kind of legislative changes needed for SAECKs to fulfil their potential.

Chapter 3: Methodology

3.1. Overview

This study undertook a semi-systematic literature review of studies on international rape kit best practices. Systematic reviews provide a synthesis of best evidence and can be useful for decisions associated with clinical best practice (Cook et al., 1997). Semi-systematic reviews apply scientific strategies in ways that limit bias to the assembling, critical appraisal, and synthesis of all relevant studies that address a specific research question (Crowther & Cook, 2007). However, while they have a narrow focus and use prescribed methods, they are unable to provide comprehensive coverage of a topic. In comparison, narrative reviews, which are multi-disciplinary and interpretive involve the description or discussion of a specific topic from a more theoretical and contextual point of view (Rother, 2007). Whilst the two types of reviews are better suited to different topics, authors have recommended an infusion of the different techniques to balance their respective strengths and weaknesses (Collins & Fauser, 2005; Moult & Meer, n.d). This can be useful for detecting themes, theoretical perspectives, or common issues within a specific discipline or for identifying components of a theoretical concept (Ward, House & Hamer, 2009). It can also be used to map a field of research, synthesise the current state of knowledge, and create an agenda for future research (Ward, House & Hamer, 2009).

Local rape kit research is limited both in quantity and scope. Therefore, in order to make recommendations for relevant policy and practice, this study turned to international literature on the topic to identify key questions and issues for the South African environment. As intersectoral collaboration is key in post-rape service provision, research on rape kit best practices is spread across a range of disciplines. A semi-systematic review was, therefore, chosen to identify, synthesise and contextualise findings in order to make evidence-based recommendations for policy and future research in South Africa.

3.2. Search strategy

The systematic search strategy involved running two sets of searches on four different databases: University of Cape Town (UCT) Library Primo, Elsevier ScienceDirect, PubMed, and Google Scholar. A preliminary search was conducted on each database using a range of keywords to develop a set of search criteria prior to

conducting the final searches. This ensured that the literature yielded would be of the highest relevance to the research question and that the same set of criteria could be applied uniformly across the databases. The final searches were limited to research articles, reports and dissertations published in English between 2010 and 2020. The first set of searches was limited to literature containing the words ‘rape kit’ in the title whereas the second set was limited to literature containing the words ‘sexual assault kit’ in the title.

The set of criteria was determined as such for several reasons. Firstly, there are various names for the rape kit such as Sexual Assault Evidence Collection Kit (SAECK), Sexual Assault Kit (SAK), Sexual Assault Forensic Evidence (SAFE) Kit and less commonly, Sexual Offence Evidence Collection (SOEC) Kit and Physical Evidence Recovery Kit (PERK). ‘Rape kit’ and ‘sexual assault kit’ were included as keywords in the search criteria as the most frequently used terms and would therefore, produce a sufficiently inclusive sample of literature. Secondly, the material types – research articles, reports, and dissertations – were selected due to their typically empirical methodologies. As the objective of this study was to identify and synthesise international rape kit best practices, recommendations had to be evidence-based. The only exception, here, was the inclusion of empirically based models and/or frameworks which also produced recommendations for best practices. Thirdly, the ten-year range of 2010 to 2020 was selected due to the study’s aim to synthesise up-to-date research evidence and make recommendations for practice and policy.

3.3. Screening and determining eligibility for inclusion in review

The screening process employed in this study involved three phases:

Phase 1

Phase 1 involved the manual screening of sources according to four predetermined criteria. For a source to be found eligible for inclusion in the review, it had to be a) a research article, report or dissertation published between 2010 and 2020 with the words ‘rape kit’ or ‘sexual assault kit’ in the title. Preliminary searches, as detailed in the above section, found that although advanced search functions were useful in terms of limiting yields according to a predetermined set of criteria, they were not always entirely accurate and would produce conflicting results, most often material types outside of the prescribed parameters. A material also had to b) be

available for full access and c) include the words ‘(best) practices’, ‘policy/policies’, ‘standard/s’, ‘model/s’ and/or ‘protocol/s’ in the title and/or abstract. For sources which did not include an abstract, executive summaries were screened. This was due to the fact that a large proportion of the literature yielded in the searches was made up of sizable, state-funded research projects addressing rape kit backlogs. These project reports were not written with the explicit purpose of being published in an academic journal and therefore, were not required to include an abstract. Although this was not ideal in terms of screening uniformity, the decision to do so was justified by the need to include such materials to increase the strength of the evidence from which recommendations for practice and policy could be made.

All sources were documented in a spreadsheet including reasons for exclusion. Materials like editorials, literature reviews, policy essays, academic magazine articles, public statements, conference scripts and presentations were excluded. Eligible sources were downloaded and saved in folders categorised by search.

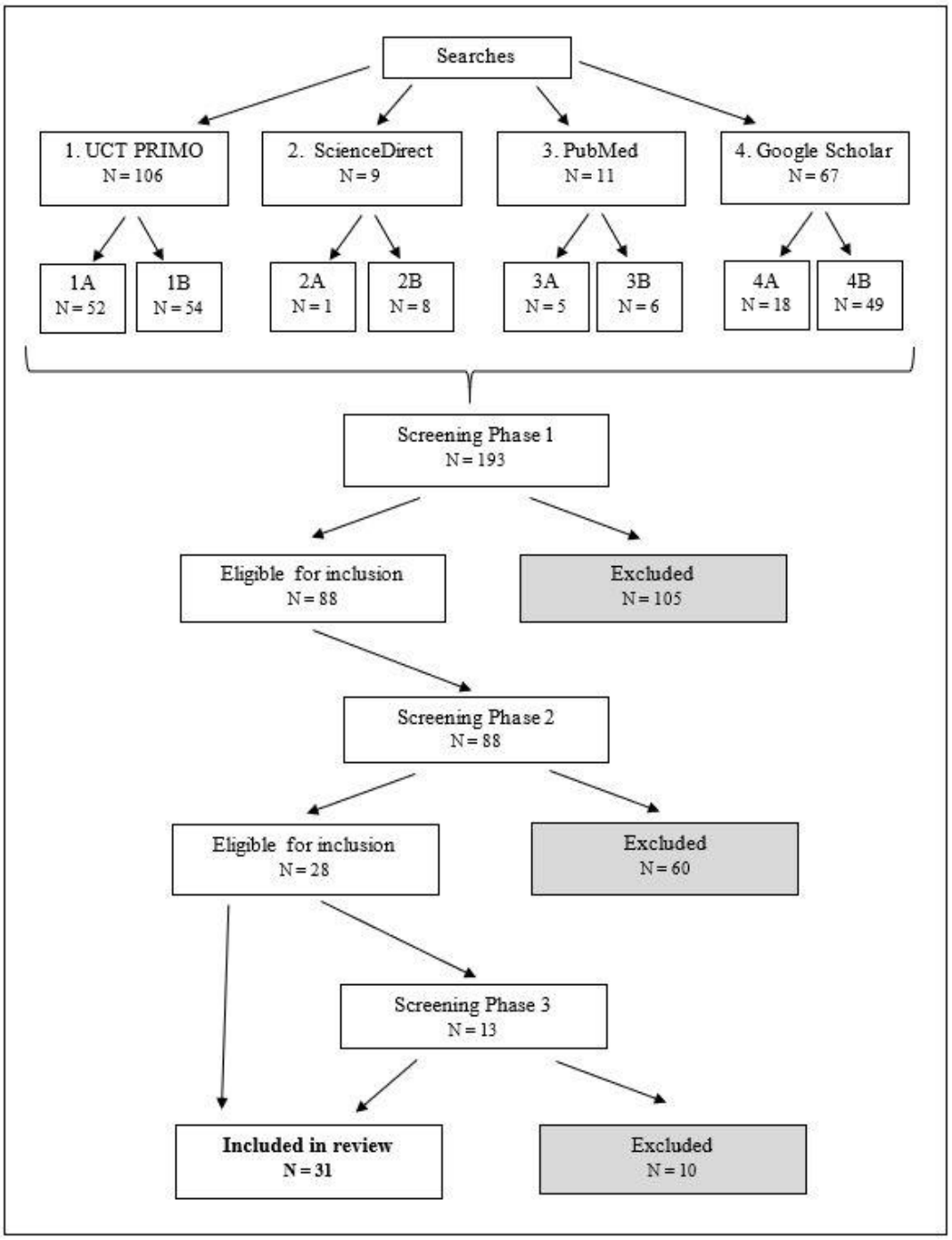
Phase 2

Phase 2 involved the manual screening of eligible sources from Phase 1. Sources were screened via their full texts. Only those that were peer-reviewed, empirical or empirically-based, such as frameworks or models, and provided findings and recommendations were included..

Phase 3

As with several other studies employing the semi-systematic literature review methodology, several sources included in the review were found in the reference lists of the those found in the initial searches in Phase 1 and Phase 2 (Moult & Meer, n.d.; Sabina & Ho, 2014). These sources were screened in an identical manner and if they met the eligibility criteria, were included in the review.

Figure 1: Search process



Search 1 was conducted on UCT Library PRIMO, Search 2 on Elsevier ScienceDirect, Search 3 on PubMed, and Search 4 on Google Scholar. The first of each search, Search 1A, 2A, 3A and 4A included research articles, reports and dissertations published between 2010 and 2020 with the words ‘rape kit’ in the title. The second of each search, Search 1B, 2B, 3B and 4B included research articles, reports, and dissertations with the words ‘sexual assault kit’ in the title.

3.3. Search results

From a total of 206 hits overall, 31 sources were included (see Table 1 below). The initial search yielded 193 hits and after screening, 88 remained eligible. These 88 sources underwent the second round of screening after which 28 sources were eligible for inclusion. 13 eligible sources were identified from the reference lists of these 28 sources. Upon screening, three remained, bringing the total number of eligible sources to 31. Notably, the majority of the sources found to be eligible for inclusion in the review were found across the different databases and as a result, were duplicated and had to be removed during screening. This contributed to a significant proportion of the exclusions made and, therefore, provides an explanation for the sudden decrease in the number of eligible sources.

Breaking down the literature to map out associated characteristics such as material types, journal sources and keyword yields produced several distinctive points. In terms of material types, 68 % (21) of the those included in the review were articles, 29 % (9) were reports and 3 % (1) were dissertations. The articles were sourced from a wide range of journals, with no more than one or two articles being sourced from each. The exceptions, here, were the Journal of Forensic Science and the Journal of Interpersonal Violence from which 14 % (3) and 19 % (4) of the articles were sourced, respectively. Other journals included the Criminal Justice Policy Review, Criminology & Public Policy, Journal of Criminal Justice, Journal of Forensic Nursing, Journal of Nursing Education, Journal of Trauma & Dissociation, Law & Behaviour, Law & Social Inquiry, Law & Society Review, Victims & Offenders, and Violence Against Women. The various disciplines evident in the different journals reflect the range of sectors involved in the criminal justice system's response to sexual assault, each with their own field of research. The larger yield from the Journal of Forensic Science and Journal of Interpersonal Violence speaks to the specialised focused of the rape kit as a forensic 'tool' for sexual assault cases.

With regards to keyword yields, both sets of keywords produced notable points. There was a distinctive difference in the amount of literature yielded between the first set of keywords with 78 % (25) containing 'sexual assault kit' in the title compared to 22 % (7) containing 'rape kit' in the title.[11] Although the terms 'rape' and

[11] It should be noted that, here, n = 32 rather than n = 31 due to an overlap with one title including both keywords.

‘sexual assault’ are used interchangeably, ‘sexual assault’ is, by legal definition, broader in that it is not limited to ‘any form of unwanted sexual penetration’ but also includes touching, fondling and molestation. Rape kits are, therefore, more often referred to using those words. The difference in the amount of literature yielded for each set of words reflects this.

Of the total yield, ‘(best) practice’ produced 50 % (20) and ‘policy’, 27.5 % (11). Looking at the other keywords, ‘protocol’ produced 15% (6) of the total yield, ‘model’ produced 5 % (2) and finally, ‘standard’ produced 2.5 % (1). Again, the total yield, here, is larger than the total yield of literature with n = 37 due to overlap of keywords with several materials having more than one of the predetermined keywords. The popularity of ‘(best) practice’ and ‘policy’ emphasises the link between the two concepts and the importance of accounting for this link in terms of ensuring the effective use of rape kits.

Table 1 below provides a breakdown of the sourced, excluded, and eligible materials for this study from each of the four databases. Appendix A presents a list of the literature included in the review. For a more detailed version, see Appendix C.

Table 1: Breakdown of search results

Database	Total Hits	Excluded	Included
UCT Library PRIMO			
Title contains 'rape kit'	52	32	21
Title contains 'sexual assault kit'	54	37	27
Total	**106**	**69**	**48**
Science Direct			
Title contains 'rape kit'	1	1	0
Title contains 'sexual assault kit'	8	3	5
Total	**9**	**4**	**5**
PubMed			
Title contains 'rape kit'	5	3	2
Title contains 'sexual assault kit'	6	1	5
Total	**11**	**4**	**7**
Google Scholar			
Title contains 'rape kit'	18	7	11
Title contains 'sexual assault kit'	49	21	27
Total	**67**	**28**	**28**
Cumulative Total	**193**	**105**	**88**
Post-Screening Total	**88**	**60**	**28**
Screened literature identified from references	13	10	3
TOTAL	**20**	**70**	**31**

3.4. Analytical strategy

This study used thematic analysis, which is suitable for analysing large qualitative data sets and for any study seeking to produce findings through interpretation in a systematic approach, such as this one (Boyatzis, 1998; Namey et al., 2008). Thematic analysis involves the identification of themes through the careful reading and re-reading of collected data as well as the forming of patterns within the data, where emerging themes become categories for later analysis (Rice & Ezzy, 1999). A crucial element of this approach is the coding and categorisation of as well as the making of connections between different parts of the data in order to identify and develop themes (Creswell, 2009, Braun & Clarke, 2006; Miles & Huberman 1994). Themes, here, refer to patterns within the data that at a minimum describe and organise possible observations and at a maximum interpret aspects of the phenomenon under study (Boyatzis, 1998).

This study incorporated both a data-driven inductive approach and a deductive a priori template of codes approach (Fereday & Muir-Cochrane, 2006; Boyatzis, 1998; Crabtree & Miller, 1999). Although studies typically employ one or the other, the flexibility of thematic analysis allows both inductive and deductive approaches to be used and, in certain circumstances, to be complementary to one another (Fereday & Muir-Cochrane, 2006; Hayes, 1997). This hybrid approach was chosen as it allowed previous research and engagement with relevant literature to be integral to the process of deductive thematic analysis while also allowing for themes to emerge directly from the data using inductive coding (Fereday & Muir-Cochrane, 2006). As the objective of this study was to identify and synthesise international rape kit best practices, literature on the topic had already been reviewed and themes surrounding such practices could be identified prior to the analysis. Here, a form of Crabtree & Miller's (1999) template approach was used to define a set of codes before commencing an in-depth analysis of the data. The inductive coding, however, involved the process of coding the data without trying to fit it into a pre-existing coding frame (Boyatzis, 1998; Braun & Clarke, 2006). This particular process was useful in allowing additional themes to emerge from the data that reflected the respective focus of each piece of literature included in the review.

Thematic analysis involves several choices which are often not made explicit, but which need to be explicitly considered and discussed (Braun & Clarke, 2006). Researchers have emphasised the importance of establishing a trail of evidence throughout the research process to demonstrate credibility and/or trustworthiness and ensure transparency in interpretative research (Braun & Clarke, 2006; Koch, 1994). This is especially true when conducting an analysis using a hybrid coding process thus it was necessary for the process and its various phases to be documented in detail. This is presented below (see Figure 2).

Phase 1: Familiarisation

It is essential in thematic analysis to immerse yourself in the data before beginning analysis, to the extent that you are familiar with the depth and breadth of the content (Braun & Clarke, 2006). As this study conducted a systematic search for literature which then underwent several screening phases, including a cold read of full texts, the familiarisation process began early on. As mentioned, materials were first read during screening after which, eligible materials were read again in order to absorb the full scope of the data available without delving into analysis (Shelby, 2018).

Phase 2: Generating initial codes

This study incorporated both deductive and inducting coding. Codes defined prior to analysis as all as those emerging from the data during analysis can be found in Appendix B. The hybrid coding process involved working systematically through the entire dataset of 31 sources, giving full and equal attention to each data item and identifying recommendations for rape kit best practices made on pertinent findings. This information was extracted and documented in the literature breakdown table as seen in Appendix A.

Phase 3: Searching for themes

Phase 3 begins when all data have been initially coded and documented, and a list of codes identified across the data set has been produced (Braun & Clarke, 2006). This phase re-focuses the analysis at a broader level of themes, rather than codes, and involves sorting the various codes into potential themes (Braun & Clarke, 2006; Nowell et al., 2017). Here, several codes were combined into a single theme and some that were either too vague or not relevant enough were discarded (Nowell et al., 2017). In addition to this, other codes became themes in their own right. Once a set of potential themes were identified, information extracted in Phase 2 was collated according to their respective codes.

Phase 4: Reviewing themes

Phase 4 involves the refinement of a set of potential themes identified in the previous phases. This refinement involved two levels of review and refinement (Braun & Clarke, 2006; Nowell et al., 2017). Level one involved reviewing the collated information for themes and examining whether they appeared to form a coherent pattern (Braun & Clarke, 2006; Nowell et al., 2017). During this phase, it became evident that some themes did not have enough data to support them and were either discarded or collapsed into another relevant theme. The second level involved a similar process but rather the reviewing of themes in relation to the data set (Braun & Clarke, 2006; Miles & Huberman, 1994; Nowell et al., 2017). Here, the validity of the themes had to be considered as well as whether they accurately reflected the recommendations evident in the data set as a whole (Braun & Clarke; Miles & Huberman, 1994; Nowell et al., 2017). Miles & Huberman (1994) recommended that this process involve an outside reviewer in order to build reliability. As this study takes the form of a Masters dissertation, the data was coded and themes, identified by one person but the analysis was then discussed with a supervisor. Although this allows for consistency in terms of methodology it fails to provide multiple perspectives from a variety of people; a limitation to be discussed later on.

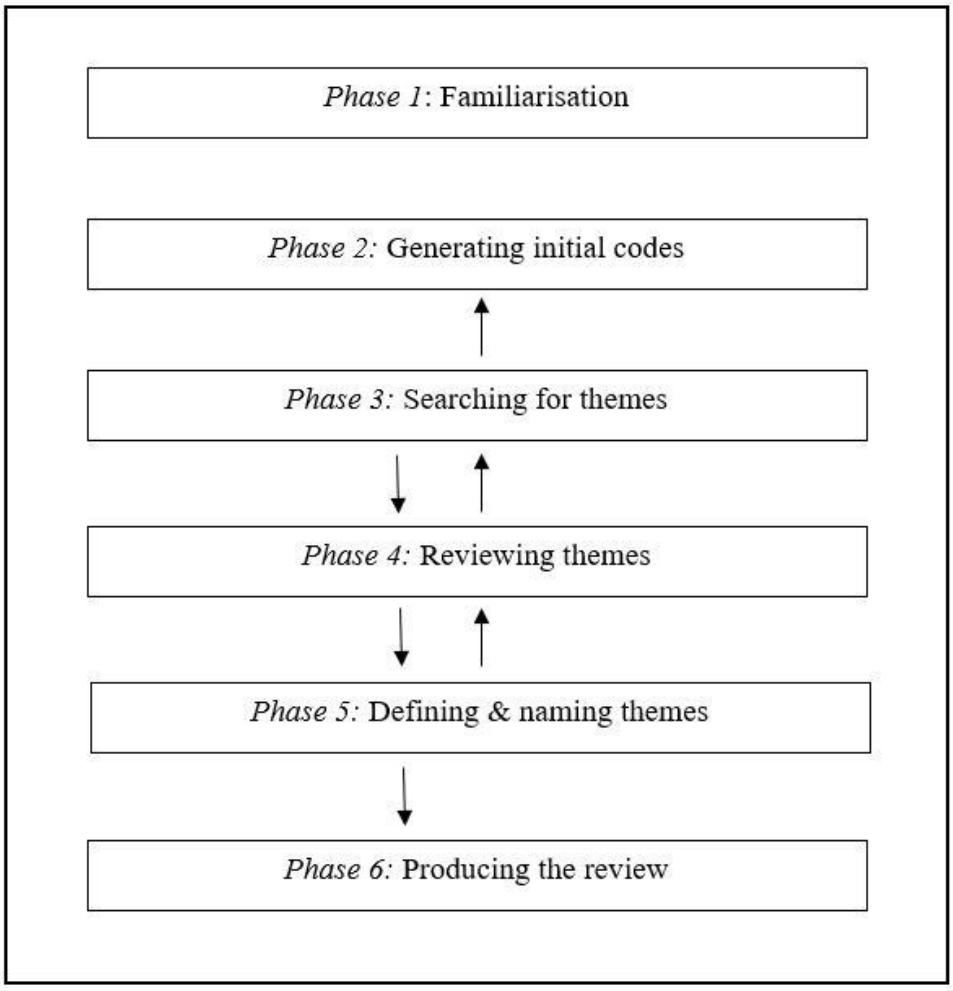
Phase 5: Defining & naming themes

Once the set of themes was deemed to be satisfactory, each theme was defined and again, refined (Braun & Clarke, 2006; Nowell et al., 2017). This involved identifying the key points and determining which aspects of the data best captured each theme. In order to do this, collated information from each theme was organised into a coherent and internally consistent account (Braun & Clarke, 2006; Nowell et al., 2017). Here, emerging sub-themes became evidence and were subsequently included. It was essential that the themes were not considered final until all of the data had been read through and the coding reviewed several times (King, 2004).

Phase 6: Producing the review

The final phase involved the final analysis and write-up of the review. It was important, here, that the analysis provided a concise, coherent, logical, and non-repetitive account of the data both within and across themes (Braun & Clarke, 2006). In addition to this, sufficient evidence had to be provided for each of the themes within the data and extracted information needed to be embedded within an analytic narrative (Braun & Clarke, 2006; Nowell et al., 2017).

Figure 2: Flow diagram of thematic analysis process



3.5. Methodological limitations

The limitations of this study were largely because of the search process employed, including the selected databases and the set of predetermined keywords. Although four databases were utilised and provided an opportunity for a wide range of literature to be yielded, the databases were selected according to institutional access. The literature included in this review was therefore limited to those published and available on said databases. Furthermore, due to varying advanced search functions across the different databases, the predetermined keywords were limited to what could be applied uniformly. For example, the advanced search functions on UCT Library PRIMO and Google Scholar did not provide an option for a keyword to be searched for in the title and/or abstract but rather title only. Therefore, although the other databases allowed for a more extensive search, the parameters were set to be suitable for all four databases.

These discrepancies also meant that separate searches had to be run for the different sets of keywords, ‘rape kit’ versus ‘sexual assault kit’, as the varying search functions did not allow searches to be run with multiple keywords. Although the need to run multiple searches did not limit the range of literature yielded, the process was inefficient. Had this function been available, screening for additional keywords would not have had to be conducted manually. Manual screening creates opportunity for human error and although methodological rigour was prioritised throughout the process, it remains possible that not all errors were accounted for.

The exclusion of certain keywords resulted in a limited range of content. Of concern, here, was the exclusion of keywords such as ‘DNA’ and ‘evidence’ in the search process. Although this was predominantly due to platform-specific limitations, it was decided that the exclusion was justified as the study was specifically focused on best practices surrounding the kit rather than DNA evidence, more generally.

Chapter 4: Findings

4.1. Overview

30 of the 31 sources included in this review presented research conducted in the US. The singular source outside of the US was a study conducted by Gokdogan & Bafta (2010) on the need for a standardised rape kit in Turkey. Notably, many of the studies were action research projects, mostly funded by US state structures. Several studies were conducted using the same datasets. Therefore, although each study had a slightly different focus to the next, the overarching objectives were the same in terms of responding to and preventing rape kit backlogs. Due to the almost complete homogeneity of research locations, most recommendations for best practices identified in the sections below were based on the key issues surrounding rape kits currently faced by the US.

4.2. A multidisciplinary, victim-centred, and trauma-informed approach

There was a clear understanding across the literature that rape kits themselves were not the primary issue behind the backlogs but rather the practices surrounding the forensic 'tool'. The success of a rape kit is largely dependent on the interaction between various role players at several points within the criminal justice system. Furthermore, due to the highly sensitive and traumatic nature of sexual assault, these interactions need to occur in a way that avoids the further victimisation of survivors. In order to effectively respond to sexual assault cases, research recommended employing a collaborative multi-disciplinary approach to ensure the implementation of victim-centred and trauma-informed protocols (Ahrens et al., 2020; Busch-Armendariz et al., 2015; Busch-Armendariz & Sulley, 2015; Busch-Armendariz, Sulley & McPhail, 2015; Campbell, Fehler-Cabral & Horsford, 2017; NIJ, 2017).

Personnel responsible for responding to sexual assault can positively affect victim engagement by following victim-centred and trauma-informed practices (NIJ, 2017). Improved victim engagement supports more comprehensive investigations, which in turn increases the overall likelihood of a successful legal outcome (NIJ, 2017). Victim-centred approaches emphasise that the delivery of services should be compassionate and sensitive to survivors' needs (Ahrens et al., 2020; Campbell, Fehler-Cabral & Horsford, 2017; NIJ, 2017). Using this approach in both the development and implementation of policy promotes the timely submission of

evidence to crime laboratories and improved decision making by court personnel. This will improve the use of rape kits in sexual assault cases whilst reducing the possibility of secondary victimisation of survivors by the system (Campbell, Fehler-Cabral & Horsford, 2017; NIJ, 2017).

In addition to this, any practice centred around responding to sexual assault should be informed by the neurobiological effects of such trauma as well as the ways in which it may affect survivors (Ahrens, Dahlgren & Howard, 2020; Busch-Armendariz & Sulley, 2015; Campbell, Fehler-Cabral & Horsford, 2017; NIJ, 2017). Trauma does not affect the accuracy of memory but can affect the organisation of the traumatic memory (NIJ, 2017). This may impact a survivor's ability to give a comprehensive statement to the investigating officer who, if unaware of these effects, may question their credibility and decide to not progress with the case. It was, therefore, recommended that all personnel responsible for engaging with rape survivors receive mandatory and ongoing training of secondary victimisation, the dynamics of sexual assault and the neurobiology of trauma (Busch-Armendariz et al., 2015; Campbell et al., 2015; Feeney et al., 2018; Grey et al., 2018; NIJ, 2017; Wells et al., 2016; Ylang, 2016). This should include sensitivity training for police investigators to ensure that they are aware of how they may project their own biases onto survivors (Ylang, 2016).

4.3. Rape kits, evidence collection and medico-legal considerations

Few recommendations were made regarding the kit and its components; however, the most common recommendation was for rape kits to be standardised. The National Institute of Justice (2017) recommended that minimum standards for rape kits be established and that until such time, a standardised kit is created for use in sexual assault cases. Kits may vary from one another depending on the manufacturer. Establishing a set of minimum criteria would thus ensure that despite these variations, all rape kits meet a certain standard, which allows for the optimal collection and documentation of medico-legal evidence (Gokdogan & Bafta, 2010; NIJ, 2017; Shaw et al., 2016).

Minimum standard criteria should include uniform packaging to ensure the proper storage and efficient tracking and retrieval of kits, a unique identifier, discreet labelling to protect victim privacy and identification for the type of kit collected for

either the victim or the suspect (Gokdogan & Bafta, 2010; NIJ, 2017; Shaw et al., 2016). Medico-legal forms should be standardised to facilitate the best possible evidence collection and analysis as well as examiner testimony, as should the wording and labelling for sample envelopes and collection items such as swabs and envelopes (Gokdogan & Bafta, 2010; NIJ, 2017; Shaw et al., 2016). [12]

The medical forensic examination should be performed by a healthcare professional who has been specially trained to do so (Grey et al., 2018; Kerka et al., 2018; NIJ, 2017). The examination should be guided by victim history, which should be documented accordingly, and samples should be collected from any victim seeking care as soon as possible but also up to five days or longer after the incident (NIJ, 2017).[13] One of the most prominent recommendations regarding the medical forensic examination was that it be conducted by specially trained medical personnel such as Sexual Assault Nurse Examiners (SANEs) or Sexual Assault Forensic Examiners (SAFEs) (Grey et al., 2018; Hendrix et al., 2020; HRW, 2010; NIJ, 2017). Instituting SANE/SAFE programmes in the collection of medico-legal evidence enhances the quality of health care for rape survivors, improves the quality of evidence collected, and increases law enforcement's ability to conduct a thorough investigation and present a case to the prosecution (NIJ, 2017). It, therefore, contributes to higher prosecution and conviction rates (Corrigan, 2013; NIJ, 2017).

Suspects' bodies can yield DNA that may assist in the investigation and possibly corroborate the survivor's account of the incident (NIJ, 2017). Except for the routine reference sample collection, typically in the form a buccal swab, the medical forensic examination should be completed by a medical forensic examiner or appropriately trained healthcare provider (NIJ, 2017). To avoid cross-contamination, suspect examinations should be conducted in a different room to the survivor's examination room and reference samples must be packaged separately from the survivor's rape kit and be clearly labelled as a suspect reference sample (NIJ, 2017).

In order to reduce the probability of DNA loss or degradation, the hospital or medical facility should transfer the rape kit to law enforcement as soon as possible

[12] See Gokdogan & Bafta (2010), Kerka et al. (2018) and National Institute of Justice (2017) for more specific recommendations regarding rape kit components.
[13] See National Institute of Justice's (2017) rape kit best practices for more detailed recommendations around evidence collection such as sample concentration, contamination, and post-mortem considerations.

after collection, ideally no later than three days (NIJ, 2017). The hospital or medical facility is responsible for the proper storage of the kit until it is received by law enforcement (Kerka et al., 2018; NIJ, 2017). To maintain the chain of custody, the date and time of transfer of the kit to law enforcement must be recorded as well as the signature of the recipient officer (NIJ, 2017).

4.4. Active investigation and the need for accountability

4.4.1. Agency response and case management

Law enforcement-based recommendations focused on proper agency response and case management. The key recommendation made was that rape kits be collected, with the survivor's consent, in every sexual assault case reported to law enforcement (NIJ, 2017). This would require all incidents of sexual assault reported to law enforcement to be considered as valid and documented accordingly.

Research on victim reporting behaviour found that survivors are often turned away and/or discouraged from pursuing a case by law enforcement personnel based on stereotypical assumptions about victim credibility and what constitutes 'real' rape. These assumptions include, amongst others, the belief that women frequently fabricate rape charges for attention, that they incite men to rape by wearing provocative clothing and that 'real' rape involves a stranger, physical force, and results in visible injury (Campbell et al., 2015; Campbell & Fehler-Cabral, 2018; Hendrix et al., 2020; Patterson & Campbell, 2012).

Although victim-sensitivity training, as previously noted, may positively impact the interaction between the survivor and system personnel, research also recommended the implementation of practices to control for the exercising of discretion by law enforcement (Campbell et al., 2015; Campbell & Fehler-Cabral, 2018). Therefore, agencies should consider modifying existing policy to make rape kit collection the default practice where survivors are given the option to opt out rather than vice versa. Although evidence may not seem important during the initial stages of investigation, it may be necessary at a later stage and should, therefore, always be collected and available for use.

4.4.2. Rape kit submission practices

As time passes, the probability of obtaining a DNA profile that is eligible to be uploaded on to a DNA database from samples within a rape kit may decrease.

Therefore, all rape kits should be submitted to the forensic laboratory as soon as possible following collection (Hendrix et al., 2020; Kerka et al., 2018; NIJ, 2017; Patterson & Campbell, 2012). Yet, research has shown that a large proportion of rape kits that are collected within the appropriate timeframe are never submitted to the forensic laboratory for DNA analysis (Campbell & Fehler-Cabral, 2018; Campbell et al., 2017; Hendrix et al., 2020; Kerka et al., 2018; NIJ, 2017; Patterson & Campbell, 2012; Ylang, 2016). The literature included in this review identified several important considerations regarding best practices surrounding rape kit submission:

Firstly, as with the poor treatment of survivors during the initial reporting process by law enforcement, rape kit submission practices are affected by the discretion of law enforcement officials according to stereotypical beliefs around victim credibility and what constitutes 'real' rape. In their study on why police 'could not' or 'would not' submit rape kits, Campbell & Fehler-Cabral (2018) reported that during their interviews, police officers stated with consistency that they did not submit rape kits for testing because they did not believe the victims and did not think that the cases were worth being pursued.

To control for such discretion, several recommendations were made. Law enforcement should implement a policy requiring officers to provide written justification as to why a kit was not submitted and/or the decision to submit a kit to be evaluated by multiple system personnel rather than relying on a single investigator (Hendrix et al., 2020; Kerka, 2018; Patterson & Campbell, 2012). Agencies should develop a protocol that outlines who should be consulted or a decision-making tree to guide the process when deciding whether a kit requires analysis (Patterson & Campbell, 2012). Implementing such practices may help to ensure quality assurance and protect against scrutiny around submission decisions (Hendrix et al., 2020).

Secondly, one of the most commonly cited reasons for not submitting rape kits for DNA testing was that law enforcement did not have an identified suspect in the case (Campbell et al., 2017; Campbell & Fehler-Cabral, 2018; Hendrix et al., 2020; Patterson & Campbell, 2012). As DNA testing explicitly aims to reveal offender identity, researchers found that the non-submission of kits could rather be explained by limited knowledge about the value of forensic science in investigative processes (Campbell et al., 2017; Campbell & Fehler-Cabral, 2018; Hendrix et al., 2020;

Patterson & Campbell, 2012). Studies found that law enforcement officers did not submit rape kits to the laboratory if the prosecutor had not requested testing and if no charges were expected to be filed against the offender (Campbell et al., 2017). They also found that law enforcement viewed DNA evidence as a confirmatory check for cases going to trial rather than an investigative tool that may help build a case to determine if it should be referred for prosecution.

Finally, law enforcement officers did not perceive DNA evidence as a resource that could be used in all investigations (Campbell et al., 2017; Campbell & Fehler-Cabral, 2018; Hendrix et al., 2020; Patterson & Campbell, 2012). Researchers found that law enforcement did not submit rape kits for testing if they believed that the forensic laboratories did not have the capacity to test evidence (Campbell et al., 2017). Furthermore, they believed that analysis would take too long to be useful in investigations. This has been largely attributed to the lack of funding for rape kit testing and lengthy delays in processing seen in the US (Johnson et al., 2012).[14]

To ensure the proper use of rape kits in sexual assault cases, those responsible for the submission of evidence to the laboratory should undergo continuous training on the utility of forensic evidence in the investigation of such cases, particularly the value of DNA evidence (Campbell et al., 2017; Campbell & Fehler-Cabral, 2018; Hendrix et al., 2020; Patterson & Campbell, 2012). It may also be useful for law enforcement to receive more information about DNA databases and their potential to produce investigative leads in both current and cold cases (Patterson & Campbell, 2012).

[14] Refer to Campbell et al. (2015), Campbell et al. (2017), Campbell & Fehler-Cabral (2018), Hendrix et al. (2020), Shaw & Campbell (2013) and Ylang (2016) for more detailed information on risk factors associated with the non-submission of rape kits by law enforcement.

4.5. Rape kit processing

4.5.1. Testing & analysis

One of the most prominent recommendations regarding rape kit processing was that all rape kits where a victim has consented to reporting should be submitted to the forensic laboratory for testing (Campbell et al., 2015; Campbell et al., 2016; Campbell et al., 2019; Campbell & Fehler-Cabral, 2018; Lovell et al., 2018; Peterson et al., 2012; Ylang, 2016). This includes kits that were collected but never submitted for analysis and have been in storage for a significant period of time. The considerations arising out of these studies emphasise the importance of developing testing policies that promote the expansion of DNA databases and are informed by the latest research on evidentiary prioritisation and the utility of older DNA samples.

Rape kit testing policies, particularly those aimed at eliminating backlogs, have typically prioritised testing kits belonging to stranger rape cases over those belonging to non-stranger cases and more recently collected kits over older ones. However, research has found that it may be beneficial to test a wider variety of kits than has previously been believed (Campbell et al., 2016; Goodman-Williams et al., 2018; Lovell et al., 2018; Peterson et al., 2012; Ylang, 2016). This is an important finding because it redefines the value of testing all collected rape kits, especially in terms of expanding DNA databases. DNA databases have the potential to identify patterns of serial sexual assault but only if they are adequately populated. It was, therefore, recommended that law enforcement agencies update their policies to mandate the testing of all rape kits, including all previously unsubmitted kits (Campbell et al., 2015; Campbell & Fehler-Cabral, 2018).

Research has reported that there is equal value in testing kits belonging to stranger rape cases as those belonging to non-stranger rape cases as they are as likely to produce a ‘hit’, or positive identification, on a DNA database (Campbell et al., 2016; Lovell et al., 2018). Campbell et al. (2016) examined this issue by randomly sampling kits associated with both stranger and non-stranger rape cases from a population of unsubmitted and unadjudicated rape kits in Detroit police property. The study compared the difference in the number of stranger kits versus non-stranger kits that produced a DNA profile that was eligible for uploading onto the database, yielded

a hit on the database, and identified a pattern of serial sex offending.[15] Results showed that although the CODIS entry rate was higher for stranger rape cases, the size of this effect was too small to be significant and the rates were concluded to be functionally equivalent (Campbell et al., 2016).

Several studies have shown that the time period between the collection and analysis of a rape kits no longer predicts whether or not a rape kit will yield a 'database eligible' DNA profile (Campbell et al., 2019, Peterson., 2012; Wentzlof et al., 2019). Campbell et al. (2019) compared the number of eligible DNA profiles and number of CODIS hits between kits that were still within the statute of limitations to those that were likely expired. Of the 351 'expired' kits tested, 173 (49 %) produced eligible DNA profiles. Of the 350 'unexpired' kits tested, 195 (55 %) produced eligible DNA profiles. Peterson et al.'s (2012) analysis of previously unsubmitted rape kits reported a similar CODIS entry rate of 53 %. Therefore, the probability of producing a DNA profile that meets the requirements for entry into a DNA database is no different for submitted versus previously unsubmitted kits (Campbell et al., 2019; Peterson et al., 2012). Upon being uploading onto the database, Campbell et al. (2019) found that 52 % of the expired and 55 % of the unexpired kits produced hits (Campbell et al., 2019). Again, this rate was similar to that reported by Peterson et al. (2012), who found a 50 % CODIS hit rate among the previously unsubmitted kits.

Considering this, policies that promote the populating of DNA databases through the testing of all rape kits may yield long term benefits for the investigation and prosecution of sexual assault cases. A populated database can provide investigators and prosecutors with evidence that can be instrumental in holding offenders accountable for their crimes (Campbell et al., 2016; Campbell et al., 2019; Campbell & Fehler-Cabral, 2018; Lovell et al., 2018). Furthermore, if testing can be streamlined, researchers suggest that the results and number of CODIS hits obtained may challenge law enforcement's biases about victim credibility. This may, in turn, positively influence rape kit submission and testing practices (Campbell & Fehler-Cabral, 2018).

[15] See Campbell et al. (2016) for further findings on the value of testing older, SOL-expired rape kits in relation to identifying patterns of serial sexual offending.

Although research has shown that there is value in testing in older rape kits, it is still strongly recommended that kits are tested in a timely manner (Campbell et al., 2018, NIJ, 2017). Campbell et al. (2018) explored how DNA evidence in untested rape kits can identify patterns of serial sexual assault and related offenders. They showed instances where an offender had a preceding qualifying offense in CODIS and how testing the rape kit may have brought a swifter resolution (Campbell et al., 2018). They also showed instances where rape kits were not tested, the associated cases were not pursued, and the offenders went on to commit more sexual assaults (Campbell et al., 2018).

4.5.2. Improving rape kit availability through the timely testing of evidence

The availability of results from rape kit analysis depends on the ability of the forensic laboratory to test the evidence in a timely manner, which is a core challenge in the US in terms of their rape kit backlogs. Perceptions of poor processing times deter law enforcement from submitting rape kits for analysis as they do not believe the laboratories have the capacity to process evidence and the rape kits will not be tested in time for use in court (Peterson et al., 2012). One of the main contributing factors to the inability of forensic laboratories to test rape kits in a timely manner is the system-wide constraint on resources and subsequent lack of laboratory processing capacity (Campbell et al., 2015; Grey et al., 2018; Hendrix et al., 2020; HRW, 2010; Patterson & Campbell, 2012; Strom et al., 2020).

For timely testing to occur and analysis results to be available for use in court, the accessibility and affordability of DNA testing needs to be improved (Campbell et al., 2018; NIJ, 2017; Strom et al., 2020). The most prominent recommendation was for the securing and distribution of funding to forensic laboratories (Campbell et al., 2015; Campbell et al., 2017; Campbell & Fehler-Cabral, 2018; HRW, 2010; NIJ, 2017; Strom et al., 2020). Furthermore, the distribution of funding should prioritise human resource capacity as the improvement of testing turnaround times relies more on having enough adequately trained forensic analysts than on system automation (Campbell et al., 2017; Hendrix et al., 2020; NIJ, 2017; Strom et al., 2020). Laboratories experiencing poor staff retention should consider implementing a staff incentive system as well as reasonable promotion policies (Grey et al., 2018; HRW, 2010).

However, as additional funding is not always available, researchers made recommendations for ways in which a laboratory's processing capacity could be improved in a cost-effective manner. This would assist laboratories in eliminating their current backlogs and preventing future backlogs from occurring without the need for significant resources. Strom et al. (2020), who explored laboratory efficiency in the testing of rape kits, recommended redefining what technicians can do on a case, dividing staff into specialised teams and diverting especially challenging data interpretation to a handful of specially trained staff. Furthermore, the addition of equipment should be done strategically and be considerate of how doing so may impact human labour and staffing needs.

Research also recommended the prioritisation of evidentiary samples within rape kits (Kerka et al., 2018; NIJ, 2017; Strom et al., 2020). If case information recorded in the police report or medico-legal documentation suggests that multiple samples may yield the same DNA profile, laboratories need not test all samples initially if the survivor only reports one assailant and indicates that no consensual sexual activity occurred around the time of the assault and/or kit collection. This will prevent excessive and repetitive testing (Kerka et al., 2018).

If a victim indicates a specific region of body where the assault occurred, samples directly related to that region should be tested first (Kerka et al., 2018). If such information is unavailable, vaginal swabs, skin stain swabs and underwear crotch cuttings and/or swabs should be examined first in order to increase the probability of obtaining a database-eligible DNA profile (Kerka et al., 2018). Testing lip and penile swabs, hairs with roots, fingernail scrapings and oral swabs for DNA does not tend to yield database-eligible DNA profiles as often as other sample types and should therefore, only be tested if specific details regarding the case encourage analysis (Kerka et al., 2018). However, if the initial sample evaluation does not reveal any probative DNA evidence, additional evidence should be submitted (NIJ, 2017).

4.6. Post-analysis considerations

Although previously unsubmitted rape kits and subsequent backlogs have been a central point of inquiry in international research, there are several important post-analysis considerations to be noted. Two of the most important considerations, here, are the ways in which survivors are notified post-analysis and the period of time for which rape kits are retained in storage.

4.6.1. Victim notification

Several studies made the recommendation that legislation be passed requiring law enforcement officers to notify survivors regarding the testing status of their rape kit within three months of its collection as well as periodically thereafter until processing is complete (HRW, 2010; NIJ, 2017; Wells et al., 2016). Campbell et al. (2017) spoke to the importance of considering the timing of victim notification in relation to when legal action might happen. Therefore, they recommended that the timing of such notifications be aligned with caseloads and staffing plans so that if survivors decide to pursue the case, law enforcement and prosecutors can begin without delay.

4.6.2. Evidence retention

Research recommended that policy be developed, or updated, to require all rape kits to be retained for a minimum of the statute of limitations for sexual offences (Campbell et al., 2015; Grey et al., 2018, NIJ, 2017). Jurisdictions that do not have such legislation should adopt biological evidence retention policies that are victim-centred and require that evidence from uncharged or unsolved reported cases is retained for 50 years or again, the length of the statute of limitations, whichever is greater (Grey et al., 2018; NIJ, 2017).

4.7. Responding to and preventing backlogs

Researchers strongly recommended the development and implementation of an electronic system for tracking all rape kits collected. This would allow various system personnel to determine the status of a kit at any stage in the storage and testing processes (Campbell et al., 2015; Grey et al., 2018; HRW, 2010; NIJ, 2017; Patterson & Campbell, 2012). Tracking systems create a measure of accountability for those responsible for handling sexual assault investigations. They also provide important data about factors affecting kit submission rates and funding needs, they help to

determine policy adoption by law enforcement and identify particular departments which submit substantially less kits others, thereby informing training needs (HRW, 2010; NIJ, 2017; Patterson & Campbell, 2012; Shaw, Coates & Janulis, 2020).

Similarly, with regards to responding to and preventing backlogs, researchers recommended that agencies responsible for rape kit storage, such as law enforcement, conduct an inventory of all rape kits in their possession (Grey et al., 2018; NIJ, 2017). This would produce a snapshot of the kits at a point in time, thereby providing agencies with the ability to establish trends, assess progress in eliminating backlogs and ensure appropriate timelines (NIJ, 2017). In addition to this, agencies should perform an annual audit to verify that all rape kits in their possession are accounted for and in their specified location (Grey et al., NIJ, 2017).

Chapter 5: Discussion

5.1. Key lessons

In surveying the international field of literature, this study identified key questions and issues for rape kit best practices in the South African environment. Although the recommendations for best practices were largely focused on responding to the US rape kit backlogs, they point to the importance of ensuring that policy is properly implemented. No matter how well a policy or protocol is constructed, its success in translating to practice depends entirely on its implementation (Campbell et al., 2017; Grey et al., 2018; HRW, 2010; NIJ, 2017). This is the key lesson for South Africa. As they are a product of failed implementation, unpacking the US backlogs provides context to this argument.

The US backlogs are predominantly made up of two 'types' of rape kits. The first are kits that have been collected but not submitted for testing as the investigating officer and/or prosecutor assigned to the case has not requested DNA analysis. This issue points to the reality that although certain procedures can be provided for by policy and system personnel can undergo extensive training, the effective use of rape kits are ultimately subject to human error and discretion. This is a gap that can be rectified by updating existing or developing new policy to include such measures and ensure its proper and consistent implementation, thereby improving the quality of practice on the ground (NIJ, 2017).

The second type of rape kits forming the US backlogs are those that have been collected and submitted for testing but are awaiting DNA analysis (Campbell & Fehler-Cabral, 2018; Campbell et al., 2017; Hendrix et al., 2020; Kerka et al., 2018; NIJ, 2017; Patterson & Campbell, 2012; Ylang, 2016). Researchers found that the backlogs were the result of several intersecting issues but most importantly, a lack of laboratory resources and the absence or dysfunction of evidence management systems.

A prominent issue is the lack of transparency and accountability in evidence management systems. Submitted kits awaiting analysis are kept in storage facilities but are not properly tracked and accounted for. This is critical for two reasons: although research has shown that older DNA samples can yield DNA profiles eligible for DNA databases and thus, have more value than researchers previously believed, best

practices state that rape kit evidence should be analysed as soon as possible after collection to prevent sample loss or contamination. In addition to this, without adequate tracking and inventory systems, the chain of custody can be compromised. This creates issues of admissibility and may result in evidence being excluded from court proceedings (Du Mont & White, 2013). To ensure the proper functioning of forensic laboratories and thus, the successful processing of rape kit evidence, researchers recommended that additional funding be secured, existing resources be strategically redistributed, and an adequate evidence management system be implemented (Campbell et al., 2015; Campbell et al., 2017; Campbell & Fehler-Cabral, 2018).

From this literature, the following factors were identified as key to successful implementation: resources, accountability, and the prioritisation of sexual assault cases. Prioritisation, here, refers to the negligent way in which sexual assault cases are treated both within the criminal justice system but also, more broadly in society. It emphasises the importance of examining rape kit practice-related issues not only in terms of system inefficacies such as inconsistent training and poor administration but also the way in which societal perceptions of rape play a role in the quality of services survivors receive. These factors span all role players within the criminal justice system, in different ways and at different times, but all play a role in ensuring the effective use of rape kits.

5.2. What are the implications for the South African environment?

Looking to South Africa's sexual offences law and policy frameworks, many of the specialised structures recommended by international rape kit literature have been implemented over the last two decades. This includes the establishment of the TCC model, which was considered as revolutionary in its aim to provide a 'one-stop', specialised service to rape survivors, the SAPS FCS Unit and FSLs. South Africa has multi-disciplinary structures, specialised services and a range of specific policy providing for this, but nevertheless, the country's rate of reported rape remains high, its conviction rate low and results from SAECK analysis are rarely available for use in court (SAPS, 2020; Jewkes et al., 2009; Vetten et al., 2008). This study, therefore, argues that many of the issues - or gaps - seen throughout the South African criminal justice system, especially the ineffective use of SAECKs may, therefore, not be due to a lack of specialised structures but rather the poor implementation of existing policy.

While international best practices produced in developed countries may account for the factors affecting the implementation of policy, the same practices may not be appropriate in developing environments such as South Africa due to differences in criminal justice and health care systems as well as socio-cultural, societal, and political contexts (Ernstzen et al., 2019). Although rape survivors in South Africa face many of the same challenges as those around the world on their journey to obtaining justice, these challenges manifest differently in local versus international environments. Therefore, policy providing for rape kit best practices needs to address these challenges whilst also accounting for the context-specific factors affecting its implementation: learn from the similarities but account for the differences.

South Africa has a relatively young democracy, with a large portion of its population living in poverty (Ernstzen et al., 2019). With available resources being channeled towards several crises, across and within the various sectors, those prioritised for responding to sexual violence are scarce and cannot adequately contribute to the issue. This, in combination with the country's high rates of disease and violence, creates a criminal justice system that is fragmented, under-resourced and over-burdened (Vetten, 2011). For South Africa to strengthen its criminal justice system and ultimately ensure the effective use of SAECKs, it is imperative that an evidence-informed, cost-effective, and time-efficient strategy be developed. Recommendations for best practices need to be tactical and target the areas in which minimum effort allows for maximum improvement. For this reason, this study directs attention to arguably the three most critical points in a rape kit's movement through the criminal justice system, namely: collection, submission, and processing.

As a case, and its SAECK, progresses through the criminal justice system, state role players begin to intersect more frequently and the actions of each role player at each point begin to impact the outcome of the next. For example, the poor collection of SAECK by a healthcare provider may influence the investigating officer to not submit the SAECK for testing. If the SAECK is submitted to the FSL, the forensic analyst may require more time to obtain a DNA profile from the samples, which creates an unnecessary burden on the laboratory, or decide not to test the SAECK altogether. The criminal justice system's heavy reliance on its personnel makes it subject to human error. These types of errors are inevitable, but predictable, and can be better managed by the inclusion of effective control measures in relevant policy and

practice (Williams, 1988). By identifying best practices for these targeted points, this study aims to recommend measures that can be taken to diminish the opportunity for human error, including discretion and protocol non-compliance, as well as account for any inconsistencies in policy implementation.

5.3. Improving SAECK collection through the introduction of a SANE programme

Local research has reported that one of the most critical issues preventing the effective use of SAECKs in South African rape cases is the inadequate collection of medico-legal evidence by healthcare providers. This has also been cited as a contributing factor to the FSL backlog as poor-quality evidence and incomplete SAECKs create an unnecessary burden and negatively impact the FSL's processing capacity (Omar, 2008). Specialised programmes that utilise forensic nurse examiners, such as the SANE and SAFE programmes, have been found to enhance the overall quality of post-rape healthcare for survivors while also improving the collection of medico-legal evidence (Grey et al., 2018; Hendrix et al., 2020; HRW, 2010; NIJ, 2017). To improve the collection of SAECKs nationwide, this study recommends increasing the access to and availability of specialised forensic services by legislating for and implementing a SANE programme, similar to those seen in the US and UK.

Through such a programme, nurses could be specially trained in the provision of forensic services and could be placed at existing health facilities in local communities nationwide. This would increase community access to specialised forensic services without the need to establish new, costly facilities, such as the TCCs and negate the dependency currently placed on doctors. Increasing access to such services would also allow for SAPS to request and obtain suspect reference samples more easily, some of which are also required to be collected by accredited healthcare practitioners. The SANE programme could form part of a leaner, 'essential' forensic services model that would provide a cost-effective, replicable, and legislative alternative to the existing TCC model. It would increase the country's capacity to respond to its rape epidemic whilst prioritising survivors through the provision of accessible, specialised forensic services, which would allow for the more effective use of SAECKs, thereby strengthening their cases.

Due to a lack of access to specialised services, most survivors obtain forensic services at the nearest medical facility, most often a public hospital (Machisa et al.,

2017; Shukumisa, 2017). This, however, should not present significant issues as SAECKs, as with rape kits globally, were designed with the explicit purpose of being a 'user-friendly' forensic tool for healthcare providers outside of specialised centres. Nevertheless, local research reported large quantities of SAECKs not being properly collected and accompanying J88 forms being rarely completed and consistently providing poor quality information, particularly regarding the presence of ano-genital injuries (Christofides et al., 2003; Jina, 2015; Jewkes et al., 2009; Machisa et al., 2017; Vetten et al., 2008).

As per the *National Health Act 61 of 2003*, SAECKs are only to be collected by authorised or accredited healthcare providers, who are registered with the Health Professions Council of South Africa or the Nursing Council of South Africa and have successfully completed a training programme or course as formulated by a national accreditation body. The abolishment of the district surgeon system and introduction of this accreditation was intended to decentralise specialised services and increase access to such services by allowing doctors, nationwide, to undergo training (Martin, 2002). A national situational analysis, however, found that only a third of healthcare providers who had collected rape kits were trained to provide post-rape medico-legal services (Christofides et al., 2005). Another reported that 72% of healthcare providers who were responsible for conducting medical forensic examinations and collecting SAECKs had received specialised training (Brouwer, 2008). It is evident that the existing accreditation structures lack adequate measures for professional accountability.

There are currently forensic nurses providing specialised medico-legal services to rape survivors in South Africa, with a local study reporting that 19 % of the SAECKs sampled were collected by nurses and the remaining 81 % by doctors (Machisa et al., 2017). The issue, here, is that the University of the Free State is the only tertiary institution offering a forensic nursing qualification (Sebaeng & Duma, 2017). In addition to this, although the forensic nurses who have undergone this training are considered as fit to provide specialised medico-legal services and provide testimony in court, the qualification has not yet been accredited and, therefore, the formal recognition of these nurses in medico-legal spaces varies significantly between provinces (Sebaeng & Duma, 2017).

Although the use of a medical forensic examiner, typically a specially trained doctor, in the TCC model is the ideal standard for the provision of medico-legal services, the model is simply too expensive to be replicated to the extent that the country needs and again, lacks adequate accountability mechanisms. The SANE programme would be more easily realised – or implemented – in the South African environment and is, therefore, the superior option. Implementing a more standardised and, therefore, more easily monitored, structure would assist in addressing the discrepancies in the access to, availability and quality of services between and within provinces.

5.4. Supervising SAECK Submission

Local research has reported that approximately 20 % of SAECKs that are appropriately completed are not sent to the FSL and never analysed (Jewkes et al., 2009; Machisa et al., 2017; Vetten et al., 2008). Considering that collected but unsubmitted rape kits make up a large proportion of the US backlogs, this phenomenon of 'non-submission' is one of the most researched issues in international literature. Rape kit non-submission has been identified as an issue of unsupervised discretion (Patterson & Campbell, 2012). The lack of transparency and accountability in these spaces speaks to the assumption that such decisions will be informed by training rather than personal beliefs or attitudes.

International literature has emphasised the importance of providing ongoing training and education for law enforcement on secondary victimisation, the dynamics of sexual assault, and the neurobiology of trauma. In addition to this, training for officers responsible for making critical decisions, such as whether to submit a rape kit for testing, should include content on the utility of forensic evidence in sexual assault cases (Busch-Armendariz et al., 2015; Campbell et al., 2015; Feeney et al., 2018; Grey et al., 2018; NIJ, 2017; Wells et al., 2016; Ylang, 2016). In South Africa, all sexual assault cases are meant to be handled by the FCS Unit, which was established with the explicit purpose of providing specialised post-rape services. Officers working within this unit are, therefore, required to undergo more extensive training on sexual assault than the average officer, however, local research continues to report that such training is inadequate (Machisa et al., 2017; Vetten et al., 2008).

The Instruction (2008) provides for the submission of SAECKs to the FSL by an investigating officer. Although the Instruction sets out the roles and responsibilities of SAPS personnel, the lack of procedural transparency in the framework makes it difficult for officers to be held accountable for their actions, even more so when such actions are taken in unsupervised spaces. With approximately one fifth of collected SAECKs not being submitted to the FSLs, it is evident that the 'specialised' services provided by the FCS officers are not what they should be, and that training is either inadequate in terms of its curriculum or inconsistently implemented. Either way, there is a need for more specific or focused provisions in existing policy that set out proper mechanisms for not only accountability in critical decision-making processes but also quality assurance to protect such decisions against scrutiny down the road (Hendrix et al., 2020; Kerka et al., 2018; Patterson & Campbell, 2012).

Drawing from international literature, this study, therefore, recommends that the Instruction is updated, to require investigating officers to provide a written justification as to why a SAECK was not submitted for analysis. The decision could also be evaluated by multiple personnel such as a supervisor, prosecutor or FSL analyst instead of relying on a single investigating officer (Hendrix et al., 2020; Kerka et al., 2018; Patterson & Campbell, 2012). Considering the dependency placed on training and the issues that have arisen from it, this study also recommends that the SAPS develop an independent protocol for SAECK submission. This would allow for more standardised and transparent decision making and could be in the form of a decision-making tree or a set of protocols outlining who should be consulted when deciding whether a SAECK should be submitted (Patterson & Campbell, 2012).

5.5. Eliminating and preventing backlogs through the more effective processing of SAECKs

While research has found that testing older kits is a valuable process in terms of populating national DNA databases and identifying patterns of serial offending, rape kits were primarily designed to assist in the investigation and prosecution of sexual assault cases (Peterson et al., 2012). However, local research found that DNA analysis reports from submitted SAECKs were almost never available for use in court (Jewkes et al., 2009; Machisa et al., 2017; Vetten et al., 2008). In addition to this, although the J88 contributes to this support by providing details on the presence of ano-genital injuries, the quality of these forms has been consistently poor and are thus

frequently considered as inadmissible or are simply not used by court personnel (Machisa et al., 2017; Mogale et al., 2015).

The objectives for the South African environment, here, are simple: eliminate the current FSL backlog and prevent another from reoccurring in the future. The implications behind these objectives, however, are significant. Between the two types of rape kits that make up backlogs identified previously, the scope of recommendations for best practices is extensive.

5.5.1. Laboratory resource management and cost-effective system optimisation

Since the withdrawal of funding in 2018, the FSL's operations have come to a halt. Nevertheless, in November 2020, it was announced that R250 million had been allocated to the SAPS forensic division with the purpose of expediting DNA processing and assisting in the elimination of laboratory backlogs (Parliament.gov.za, 2020). This cash injection would certainly allow for the improvement and optimisation of existing laboratory systems. It is understandable that this was clearly reflected in the recommendations for best practice made by international researchers, however, it may not be enough to adequately address the extent of the laboratory dysfunction reported nationwide (Campbell et al., 2015; Campbell et al., 2017; Campbell & Fehler-Cabral, 2018). Furthermore, it stands in contrast to the SAPS budget, which has increasingly tightened over recent years (SAPS, 2020).

Drawing from both local and international literature, it is, however, possible for the FSLs to strategically redistribute existing resources and cost-effectively optimise their systems to increase processing capacity without comprising the validity and quality of evidentiary results.

International literature has emphasised that the ability of the forensic laboratories to process rape kits in a timely manner is affected by its processing capacity and that this cannot be surrogated by new equipment but rather requires having enough qualified analysts (Campbell et al., 2017; Hendrix et al., 2020; NIJ, 2017; Strom et al., 2020). Although the standard of the CRFSS training is high, the cost is exorbitant and as a result, the FSL is unable to offer a substantial income for specialised analysts nor an adequate promotion policy (Omar, 2008). Consequently, the FSLs suffer from poor retention and a high turnover of staff. This is particularly bad in the FSL Biology Unit, which is responsible for analysing the DNA components

of SAECKs. Therefore, whilst the plan to use to the recent cash injection to procure critical laboratory consumables cannot be faulted, it is crucial that the FSL prioritise human capital both whenever funding is concerned but also in operational practices, more generally. This is absolutely critical in order to begin eliminating the current rape kit backlog as well as prevent another from occurring.

Looking at the SAPS' 2020/21 Annual Performance Plan, the recommendation to prioritise the retention of specially trained analysts is in line with their stated intention to shift from a focus on increasing human capital to the 'optimal utilisation' of existing human capital (SAPS, 2020). The FSL is underfunded but continue to spend the little resources they have on providing specialised training to analysts but have taken no measures to ensure that they get a return on their investment. Rather than doing this, the FSLs should consider implementing staffing incentives thereby encouraging the analysts receiving the specialist training to remain working at the laboratory on a long-term basis. Although resources would need to be reallocated to and spent on providing these incentives, this would ultimately cost less than the current system, which contributes to the inability of the FSLs to process SAECKs in a timely manner. Drawing from international literature on laboratory system optimisation, such incentives could include market-related salaries for specialised analysts, an effective promotion policy and a focus on career development within the agency (Grey et al., 2018; HRW, 2010). The idea of ensuring proper career development been emphasised by the SAPS over the last few years but this has yet to manifest in practice (SAPS, 2019; SAPS, 2020).

International literature also suggests that laboratories consider reorganising existing staffing structures. This could include redefining what technicians can do on a case, dividing staff into specialised teams and diverting especially challenging data interpretations to small groups of specially trained staff (Strom et al., 2020). Optimising the FSL system in this way would complement the recommended shift from training more analysts and spending less funding on retention to training fewer analysts but investing in their career development thereby ensuring they, and their specialised skills, remain at the laboratory.

Other recommendations for cost-effective optimisation were made more specifically in relation to the elimination of backlogs. One of the contributing factors

to reduced laboratory processing capacity and therefore, the rape kit backlogs, is the excessive and repetitive testing of evidentiary samples. The FSL's policy currently focuses on the prioritisation between SAECKs according to upcoming court dates and prosecutor requests (Omar, 2008). Although this is useful, expanding such policies to include prioritisation both between rape kits as well as between the samples within rape kits would better equip laboratories to process evidence in a timelier manner. The decision to test the samples within rape kits that are most likely to produce a DNA profile that would be eligible for loading on to a database is a logical one. Ideally, all available evidence should be analysed to provide maximum evidentiary support, but this is not always possible. Laboratories, therefore, need to be strategic and follow evidence-based optimisation processes, such as SAECK sample prioritisation.

It is also imperative that the FSL update its policy to mandate the testing of all rape kits, including those which have been previously unsubmitted. It is not a recommendation specifically in relation to the system optimisation but is one that needs to be noted where rape kit testing is concerned, specifically in relation to the backlog elimination. Although the FSLs may want to employ existing prioritisation practices when testing backlogged kits, research has shown that the criminal justice system may benefit from testing a wider variety of kits than previously believed. All SAECKs are valuable in their potential contribution to the expansion of the national DNA database (Campbell et al., 2016; Goodman-Williams et al., 2018; Lovell et al., 2018; Peterson et al., 2012; Ylang, 2016). This, in itself, has the potential to aid in the investigation and prosecution of sexual assault cases by identifying patterns of serial offending (Campbell et al., 2016).

Locally identified measures of cost-effective system optimisation are also notable. Most pertinent, here, is the recommendation for the FSLs to redesign their storage space to limit unnecessary movement and handling of evidence, and in turn increase processing capacity to allow for the timely testing of SAECKs (van der Walt & Luke, 2011). Research conducted on the Pretoria FSL reported that the design of its storage space was far from ideal and that the areas used for storing samples were not strategically situated (van der Walt & Luke, 2011). To limit unnecessary movement thereby increasing testing efficiency, it was recommended that the storage facilities be centralised, rather than spread out. The FSL should also consider introducing storage equipment such as shelving and specially designed boxes to maximize available space

in such a way that alterations for growth can be easily incorporated (van der Walt & Luke, 2011). Although these recommendations were based off findings from a study focusing on only one laboratory, it provides important considerations for others nationwide.

5.5.2. Ensuring requests are made for DNA analysis

In South Africa, the process of requiring a request for DNA analysis was designed to prioritise testing for cases according to court dates and to assist the laboratory in preparing for the case (Omar, 2008). International literature suggests that the investigating officer or prosecutor may not believe that DNA evidence will be helpful in the investigation of a case and/or does not anticipate that the results will be available in time and therefore does not request analysis (Campbell et al., 2017; Campbell & Fehler-Cabral, 2018). Locally, researchers added that the investigating officer or prosecutor may simply be unaware that a request form is required for the laboratory to conduct the analysis (Omar, 2008).

The fact that such circumstances are still present, especially in an environment with so many structures dedicated to providing specialised services, points to a dysfunctional system and identifies the need for improved and more thorough training for criminal justice personnel. Such training should focus on the value and utility of DNA evidence in sexual assault cases, including the potential utility of the NFDD. It should also include information on the various laboratory processes, including requirements for and standard operating procedures surrounding DNA analysis (Campbell et al., 2017; Campbell & Fehler-Cabral, 2018; Hendrix et al., 2020; Patterson & Campbell, 2012).

5.5.3. Procedural transparency and accountability

Although South Africa has seen the introduction of a range of specialised structures, including the FSLs, the policies providing for these structures lack adequate accountability measures. Internationally, researchers have identified the same issue as a contributing factor to the rape kit backlogs. Role players make critical decisions and take actions that directly affect the way in which SAECKs move through the system and ultimately, impact a survivor's access to justice. In South Africa, these decisions and actions are provided for by extensive policy which is intended to ensure

evidentiary support for survivors but the presence of the FSL rape kit backlog proves otherwise.

The SAPS FSL has recognised the need for a proper inventory control system and uses the Evidence Management System (EMS), to determine the location and volume of samples at any given point yet stock inventory reports are rarely, if ever, made available to the public (van der Walt & Luke, 2008). Considering the current state of the FSL, the lack of consumables, loss of maintenance contracts and quickly growing backlog, this lack of transparency and accountability creates reasonable concern around whether these systems are functional. Furthermore, as South Africa recently repealed the section of the Prescription Act, which previously gave survivors 20 years to report a sexual offence, it is imperative that all SAECKs in their possession can be accounted for, at any time.

Research has emphasised the importance of ensuring that collected evidence is available for use if a survivor ever chooses to pursue a case (Campbell & Fehler-Cabral, 2018). This study, therefore, recommends that any SAECK audit or stock verification conducted by the FSL, which they have reported is carried out at a minimum every quarter, be made public. Audits would ensure that appropriate testing timelines are being followed or at the very least, that the relevant authorities are alerted when they are not (Grey et al., 2018). This would create an essential reporting mechanism through which the FSL would be required to be transparent in their progress regarding the elimination of the backlog and be held accountable for preventing another from occurring in the future.

Another recommendation is the FSL make their EMS accessible to all personnel in the criminal justice system. This gap in the flow of information between role players can be costly in terms of solving or finalising cases and can negatively impact the efficiency of the system, as a whole (van der Walt & Luke, 2008). Furthermore, the inability of role players, outside of the SAPS, to provide information to a survivor on the status of their SAECK creates a deficit in accountability. Therefore, although the opening of the existing system or establishment of an entirely new one may be a complex and costly process, doing so would ensure transparency and, therefore, accountability, both within the system, between role players, but also between the system and survivors.

5.5.4. The repealed statute of limitations and its implications for victim notification

The only piece of legislation providing for the notification of survivors after their SAECKs have been analysed is the Instruction (2008), which states that the investigating officer must keep the survivor informed of any developments in the investigation of the case. There is currently no policy providing for the procedure by which a survivor, whose SAECK forms part of the backlog, is to be notified upon the analysis of collected evidence. The quantity of international literature exploring 'victim notification' best practice gives a clear indication of the importance of having such a procedure in place.

The repealing of South Africa's previous statute of limitations, or prescription, on the reporting of sexual offences means that now, all sexual offences, regardless of when they were committed, can be evaluated according to available evidence after which a decision can be made regarding prosecution (Thorpe, 2017). This has significant implications for survivors whose SAECKs were previously unsubmitted or unanalysed and had given up on their attempt to obtain justice. It also reiterates the importance of testing all SAECKs, even it means testing evidence regardless of the time passed since collection as DNA profiles obtained from older kits can serve to populate the NFDD (Peterson et al., 2012).

It is, therefore, critical that the Instruction (2008) and the DNA Act (2013), are updated to include victim notification procedures specifically pertaining to the testing of backlogged SAECKs. Furthermore, considering that the SAPS is perpetually under-resourced and over-burdened with cases, policy providing for these procedures needs to ensure that the timing of notifications is aligned with caseloads and staffing plans so that should a survivor decide to take their case forward, the investigating officer can begin assisting as soon as possible (Campbell et al., 2017).

5.6. Limitations: How inclusive is 'international' literature, really?

Although the study aimed to identify and synthesis international rape kit best practices, almost all the literature included here presented research conducted in the US. Considering the study's focus on 'international' literature, the review and subsequent recommendations for best practices were largely limited to US-based studies and their findings. The limited range in available literature points to several important considerations.

Firstly, the US currently remains a leader in science and technology and thus, has had the highest volume of research articles published (Guarino, 2020). Secondly, as previously mentioned, many of the included studies took the form of large, state-funded action research projects. For such sizable projects, considerable funding is required. This type of financial capital is not readily available in many other regions for general system improvement let alone for such research.

Finally, the kind of research seen in these state-funded action projects typically requires the level of institutional access that can only be granted by the government. External researchers may, realistically, face additional obstacles in terms of obtaining the kind of unrestricted access required to conduct such research in comparison to those working more internally with the state as was with the task teams responsible for running these projects. Therefore, even though the searches and subsequently, the literature yielded were limited to the available databases, the results and range of locations in which research was conducted may not have differed significantly. Furthermore, if the US is where rape kits have been most recently research and where research has been most thorough due to unrestricted access then it is the findings from those studies that should inform the recommendations for best practice.

Chapter 6: Conclusion and recommendations

6.1. Conclusion

With the aim of identifying and synthesising international rape kit best practices, this study yielded a substantial amount of recently published, empirical literature from a wide range of disciplines. Although all but one of the sources presented research from the US, this was as a result of the range of available evidence more generally than the specific search parameters. This speaks to the need for funding and state-organised agency access for such research to be conducted. From the literature, recommendations were made in terms of both practices, more generally, but also in terms of responding to rape kit backlogs.

Available research surrounding rape kit best practices has significantly increased in the last two decades following the introduction of DNA evidence into investigative practice. With such practices being a somewhat recent addition to standard operating procedures for various state actors, current research recommends that policy and legislative frameworks previously providing for said procedures be reviewed, updated, or replaced entirely. This is to ensure that policy is properly implemented but that the underlying reasons as to why certain issues have been allowed to manifest are targeted and addressed. Issues here include, among others, the inadequate collection of medico-legal evidence, failure to submit collected rape kits and lack of agency transparency, all within the context of growing rape kit backlogs at forensic science laboratories, including those in South Africa.

Although South Africa has made commendable movement towards a higher quality of post-rape service provision and has, over the last two decades, introduced of a range of specialised services, the country's conviction rate remains concerningly low. FSL reports on DNA analysis are rarely available for use in court and J88 forms are often so poorly completed that they are, more often than not, considered to be inadmissible as evidence. It could be argued that one of South Africa's most powerful weapons against sexual violence is not being properly deployed and therefore, not fulfilling its potential. The ineffective use of SAECKs is only one gap in the unsuccessful progression of rape cases in South Africa, but it is one that, if rectified, could provide much needed support for survivors in their fight for justice.

Drawing from international literature, this study made the argument that the ineffective use of SAECKs in cases of sexual assault is not the result of a lack of specialised services but rather the poor implementation of related policy. Research on the US backlogs found that the factors most critical to successful implementation were resources, accountability, and the prioritisation of sexual assault cases. The key lesson for the South African environment was that, although rape survivors face many of the same challenges in their journey through the criminal justice system, these challenges are experienced differently in the local versus international environments. Recommendations for best practices, therefore, need to address these challenges whilst also accounting for the context-specific factors that may affect the uptake or implementation of related policy.

The South African environment presents a range of factors contributing to the country's inability to adequately respond to its sexual violence crisis: a large population, immense poverty, multiple health crises, high rates of violent crime, including its status as the world's rape capital, a chronic lack of resources and subsequent poor responder capacity. Considering this, it was established that in order to improve the country's response, particularly in terms of the availability and use of SAECKs in sexual assault cases, an evidence-based, cost-effective, and time-efficient strategy was required. This involved targeting the areas in which the minimum effort would allow for maximum improvement and in turn, the study identified the three most critical points in a SAECK's movement through the criminal justice system: collection, submission, and processing. The implications for the South African environment were discussed and recommendations for best practices at these points were made. Recommendations were made with the intention of providing the most realistic, in terms of implementation, and strategic measures for addressing the current gaps in the criminal justice system. These recommendations were, therefore, not for entirely new structures or policy but rather for changes to or the expansion of existing ones.

6.2. Recommendations

6.2.1. Recommendations for policy

From the literature yielded in this study, several recommendations for rape kit best practices were made. After identification and synthesis, recommendations and their key lessons for the South African setting were discussed. They are summarised below:

- Legislate and implement a Sexual Assault Nurse Examiner (SANE) Programme.
- Update the Instruction (2008) to:

  Require a written justification from an investigating officer as to why a SAECK was not submitted to the FSL for analysis.

  and/or

  Require a multi-personnel evaluation of the decision to submit a SAECK to the FSL for analysis.

  and/or

  Provide investigating officers with a decision-making tree or set of protocols outlining who should be consulted when deciding whether to submit a SAECK to the FSL for analysis.

- Implement staffing incentives for FSL analysts.
- Reorganise FSL staffing structures by redefining what analysts can do on a case, dividing staff into specialised teams, and diverting especially challenging data interpretations to a small group with specially trained staff.
- Update the DNA Act (2013) to include prioritisation between SAECKs as well as between samples within the SAECKs according to which samples are most likely to produce a DNA profile that would be eligible for loading onto the NFDD.
- Update the DNA Act (2013) to mandate the testing of all submitted SAECKs.
- Centralise FSL storage facilities and introduce specialised storage equipment to maximise available space in a way that can accommodate growth.
- Increase training for criminal justice personnel, specifically on the value and utility of DNA evidence in sexual assault cases and the potential utility of the NFDD.
- The FSL should perform annual audits to verify that all SAECKs in their possession are accounted for and in their specified location.

- Any SAECK audit or stock verification conducted by the FSL should be made public.
- Open the existing FSL Evidence Management System, or establish a new one, to provide access to all criminal justice personnel.
- Update the Instruction (2008) and/or DNA Act (2013) to include a victim notification procedure, specifically relating to the processing of previously unsubmitted SAECKs.

6.2.2. Recommendations for future research

In addition to making recommendations for rape kit best practices in South Africa, this study also aims to make recommendations for future research. The premise of a semi-systematic literature review is to synthesise relevant research and provide evidence-based guidance to clinical practice. One of the main tenants of this 'guidance' involves identifying areas of practice in which research is most needed. The importance of doing so is also reiterated in the recommendation for the monitoring and evaluation of policy implementation. It is from here that researchers may draw valuable data and develop strategies for system improvement. Therefore, taking direction from both international and local literature, this study makes the following recommendations for future research on rape kits in South Africa.

It is clear, in the limited literature available on rape kits in South Africa, that there is a need for research to be conducted on the availability, utility and perceived value of medico-legal evidence in sexual assault cases, particularly DNA evidence. It is, therefore, recommended that such research be done and that, taking guidance from the international studies included in the review, it be initiated, independently from but funded by the state. This would allow for easier access to agency data, records and knowledge thereby producing more rigorous studies. A useful study, here, would be one that tracks a large set of SAECKs from their collection to their (non-)use in court.

In terms of specialised forensic services, local research has reported that the provision of such services is inadequate and inconsistent, especially in rural areas. In order to gain a clearer picture of what this looks like, on the ground, and what those communities most need, it is recommended that research be conducted on the state of such services nationwide. This kind of data would prove useful in determining the most effective way forward in terms of improving the access to and availability and

quality of specialised services across the country. Such research may take the form of a monitoring and evaluation project, stakeholder engagements and/or community surveys.

The final recommendation is that research be conducted on the SAECK backlog. Methodological guidance can be taken from the US-based action research projects included in this review. Here, research should examine the functioning of the FSL and state of the current backlog in terms of forensic evidence in sexual assault cases, including the use and population of the NFDD. Progress can only be made once the current issues, what caused these issues, and what measures can be most easily implemented for the greatest improvement have been identified.

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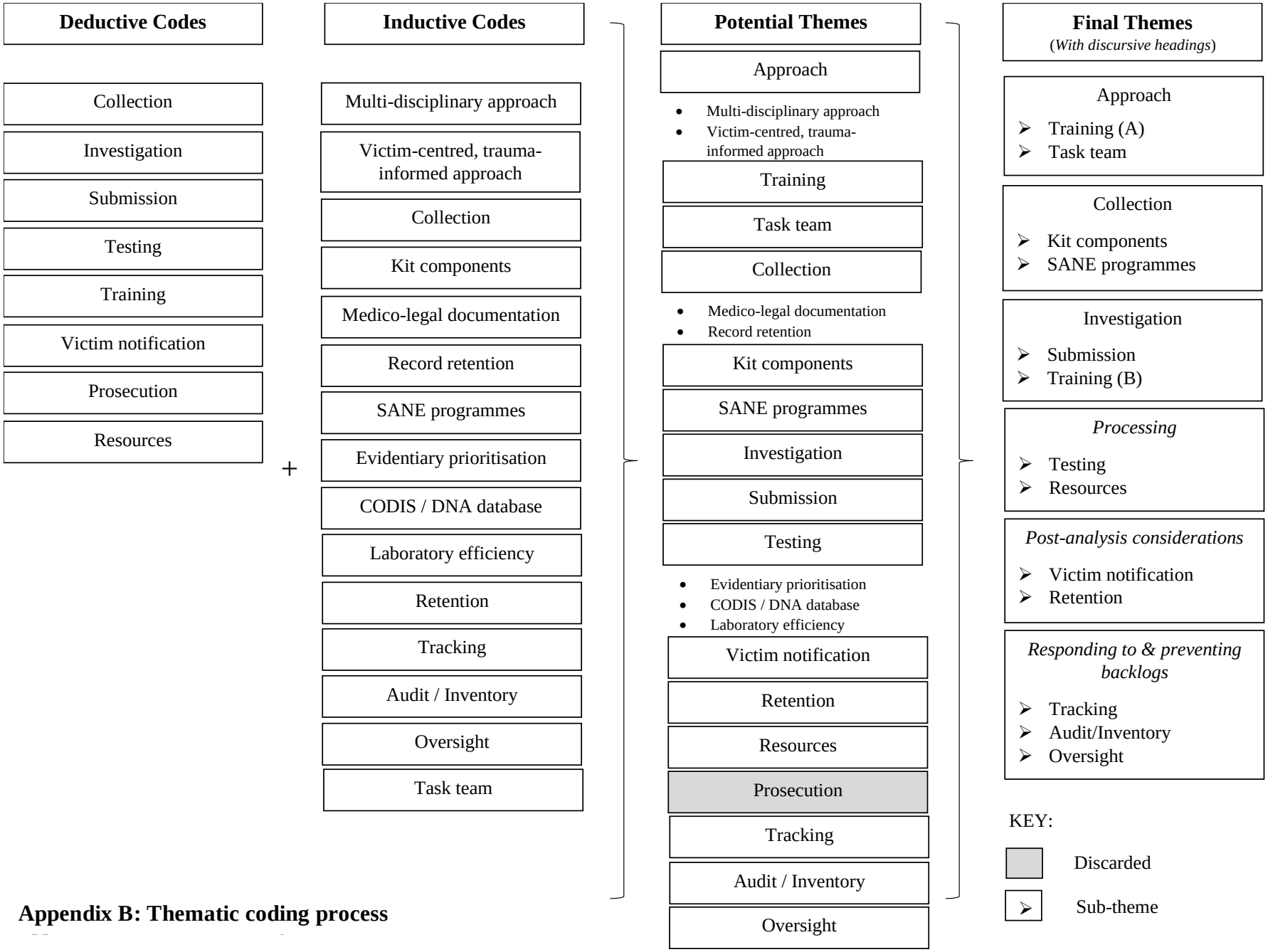
Appendices

Appendix A: List of literature included in the review

#	Author/s	Date	Title
1	Ahrens, Dahlgren & Howard	2020	Rape Kit Notification: Recommendations and Barriers to Reconnecting with Survivors
2	Busch-Armendariz, Donde, Sulley & Vohra-Gupta	2015	How to Notify Victims about Sexual Assault Kit Evidence: Insight and Recommendations from Victims and Professionals
3	Busch-Armendariz & Sulley	2015	Key Components of Building a Successful Victim Notification Protocol
4	Busch-Armendariz, Sulley & McPhail	2015	Sexual Assault Victim's Experiences of Notification after a CODIS Hit
5	Campbell, Fehler-Cabral & Horsford	2017	Creating a Victim Notification Protocol for Untested Sexual Assault Kits: An Empirically Supported Planning Framework
6	Campbell & Fehler-Cabral	2016	Why Police "Couldn't or Wouldn't" submit Sexual Assault Kits for Forensic DNA Testing: A Focal Concerns Theory Analysis of Untested Rape Kits
7	Campbell, Fehler-Cabral, Bybee & Shaw	2017	Forgotten Evidence: A Mixed Methods Study of Why Sexual Assault Kits (SAKs Are Not Submitted for DNA Forensic Testing
8	Campbell, Fehler-Cabral, Pierce, Sharma, Bybee, Shaw, Horsford & Feeney	2015	The Detroit Sexual Assault Kit Action Research Project
9	Campbell, Pierce, Sharma, Feeney & Fehler-Cabral	2016	Should Rape Kit Testing Be Prioritized by Victim-Offender Relationship: Empirical Comparison of Forensic Testing Outcomes for Stranger and Non-Stranger Sexual Assaults
10	Campbell, Pierce, Sharma, Feeney & Fehler-Cabral	2019	Developing Empirically Informed Policies for Sexual Assault Kit DNA Testing: Is It Too Late to Test Kits Beyond the Statue of Limitations?
11	Campbell, Feeney, Pierce, Sharma & Fehler-Cabral	2018	Tested at Last: How DNA Evidence in Untested Rape Kits Can Identify Offenders and Serial Sexual Assaults
12	Campbell, Shaw & Fehler-Cabral	2018	Evaluation of a Victim-Centred, Trauma-Informed Victim Notification Protocol for Untested Sexual Assault Kits (SAKs)
13	Corrigan	2013	The New Trial by Ordeal: Rape Kits, Police Practices, and the Unintended Effects of Policy Innovation
14	Feeney, Campbell & Cain	2018	*Do You Wish to Prosecute the Person Who Assaulted You?:* Untested Sexual Assault Kits and Victim Notification of Rape Survivors Assaulted as Adolescents
15	Gokdogan & Bafta	2010	Development of a Sexual Assault Evidence Collection Kit – The Need for Standardization in Turkey
16	Goodman-Williams, Campbell, Sharma, Pierce, Feeney & Fehler-Cabral	2019	How to Right a Wrong: Empirically Evaluating Whether Victim, Offender, and Assault Characteristics can Inform Rape Kit Testing Policies
17	Grey, Arthur, Tomenko, Shaler & Snell	2018	Maine Sexual Assault Kit Study
18	Hendrix, Strom, Parish, Melton & Young	2020	An Examination of Sexual Assault Kit Submission Efficiencies Among a Nationally Representative Sample of Law Enforcement Agencies
19	Human Rights Watch	2010	"*I Used to Think the Law Would Protect Me"* Illinois's Failure to Test Rape Kits

20	Kerka, Heckman, Albert, Sprague & Maddox	2018	Statistical Modelling of the Case Information from the Ohio Attorney General's Sexual Assault Kit Testing Initiative
21	Lovell, Luinais, Flannery, Bell & Kyker	2018	Describing the process and quantifying the outcomes of the Cuyahoga County sexual assault kit initiative
22	National Institute of Justice	2017	National Best Practices for Sexual Assault Kits: A Multidisciplinary approach
23	Patterson & Campbell	2012	The Problem of Untested Sexual Assault Kits: Why Are Some Kits Never Submitted to a Crime Laboratory?
24	Peterson, Johnson, Herz, Graziano & Oehler	2012	Sexual Assault Kit Backlog Study
25	Shaw & Campbell	2013	Predicting Sexual Assault Kit Submission Among Adolescent Rape Cases Treated in Forensic Nurse Examiner Programs
26	Shaw, Campbell, Hagstrom, O'Reilly, Krieger, Cain & Nye	2016	Bringing Research into Practice: An Evaluation of Michigan's Sexual Assault Kit
27	Shaw, Coates & Janulis	2020	High rates of sexual assault kit submission and the important role of place
28	Strom, Hendrix, Parish, Melton & Feeney	2020	Estimating Crime Laboratory Efficiency in the Testing of Sexual Assault Kits
29	Wells, Campbell & Franklin	2016	Unsubmitted Sexual Assault Kits in Houston, TX: Case Characteristics, Forensic Testing Results, and the Investigation of CODIS Hits
30	Wentzlof, Kerka, Albert, Sprague & Maddox	2019	Comparison of Decision Tree and Logistics Regression Models for Utilization in Sexual Assault Kit Processing
31	Ylang	2016	Examining Race and Sexual assault Kit Submission: A Test of Black's Behaviour of Law Theory



Appendix B: Thematic coding process

Appendix C: Summary of literature included in the review

Reference	Title	Method	Sample characteristics	Recommendations for best practice based on findings	Keywords	Themes
Ahrens, Dahlgren & Howard (2020)	Rape Kit Notification: Recommendations and Barriers to Reconnecting with Survivors	Interviews Focus group	79 criminal justice, advocacy, and public policy professionals and 19 rape survivors	• An overall approach to notification that highlights care, choice, safety, and information for survivors may be more important than specific logistical decisions about whether to send a letter or make a phone call. • Trauma-informed and survivor-centric processes have the potential to radically transform survivors' experiences with the criminal justice system.	Rape kit Policy	Approach Victim notification
Busch-Armendariz, Donde, Sulley & Vohra-Gupta (2015)	How to Notify Victims about Sexual Assault Kit Evidence: Insight and Recommendations from Victims and Professionals	Project Focus group, individual interviews	42 victims, 27 professionals	• Law enforcement should not assume that a victim does or does not want to be notified. • All victims should be given the opportunity to be notified, and the decision for notification should be a choice provided to all victims instead of something imposed on them by someone else. • Mechanisms for notification should be flexible and thoughtful and incorporate choices for victims. • Victims should have the choice in whether their case moves forward based on DNA testing. • Resources and support are imperative to the notification process.	Sexual assault kit Practice	Approach Testing Victim notification Resources
Busch-Armendariz & Sulley (2015)	Key Components of Building a Successful Victim Notification Protocol	ARP Survey	12 participants (law enforcement professionals, advocates and researchers)	• Conduct a resource assessment to determine resource needs, existing budget, personnel capacity, cost for new tools and technology. • Develop relationships to spread the word about victim notification services, especially with community-based advocates. • Ensure that a victim-centred approach shapes the notification process. This should include information related to neurobiology of trauma, a range of choice for victims to re-engage, victims' access to a justice advocate and community-based advocates, and incorporation of other best practices for engaging victims of sexual assault.	Sexual assault kit Practices Protocol	Approach Victim notification Resources Oversight

				• Assessment of policies and procedures should be ongoing and include evaluation of the investigator's practices to sensitively contact and engage victims.		
Busch-Armendariz, Sulley & McPhail (2015)	Sexual Assault Victim's Experiences of Notification after a CODIS Hit	Interviews	7 victims	• Law enforcement should demonstrate compassion, care, concern, flexibility and accommodation towards victims to reduce potential harm of re-traumatisation at time of contact. • Law enforcement should receive training and continuing education on the impact of trauma to improve their response to victims. • The justice advocate must be included in the notification process in order to improve victims' experiences and reduce potential harm. • Law enforcement and justice advocate should provide information on support services. • Law enforcement and justice advocate should explain victims' options and choices related to participation in case at the time of contact.	Sexual assault kit Practices	Approach Training Victim notification
Campbell, Fehler-Cabral & Horsford (2017)	Creating a Victim Notification Protocol for Untested Sexual Assault Kits: An Empirically Supported Planning Framework	Empirically supported planning framework	186 observations 229 interviews	• Notification protocol planning team should include mental health experts. • Protocols must be victim-centred, and trauma informed. • For cases that might be reopened to further investigation and possible prosecution, it is important to consider the timing of the notification vis-à-vis when such legal action might happen. Timing of notifications should be aligned with caseloads and staffing plans so that if survivors express willingness to participate, investigators and prosecutors can begin work right away. • The decision to notify a victim should either be made by a professional who has recently received evidence-based training on trauma-informed practices or by a multidisciplinary team. • Notification planning teams should consider when and how both community-and systems-based advocates can be most helpful to survivors. • As notifications will reactivate traumatic memories, all survivors should be given information about community	Sexual assault kit Protocol Practice	Approach Victim notification Oversight

				support services and safety planning when they are contacted. • Importance of protocol of monitoring and evaluation. It is imperative so that findings are disseminated so that successful strategies for contacting and reengaging sexual assault victims can be identified.		
Campbell & Fehler-Cabral (2018)	Why Police "Couldn't or Wouldn't" submit Sexual Assault Kits for Forensic DNA Testing: A Focal Concerns Theory Analysis of Untested Rape Kits	Ethnographic observation, interviews, archival record review	186 hours of observation 42 interviews 93 documents	• Victims need to be given agency in decision making processes. • Mandate rape kit testing but also address the underlying reasons as why so many kits are not tested in the first place. • Provide federal funding for testing – if resource constraints can be overcome and testing can be streamlined, it is possible that results and CODIS hits may challenge enforcement's biases about victim credibility by providing supporting evidence.	Sexual assault kit Rape kit Practices	Approach Testing Resources
Campbell, Fehler-Cabral, Bybee & Shaw (2017)	Forgotten Evidence: A Mixed Methods Study of Why Sexual Assault Kits (SAKs Are Not Submitted for DNA Forensic Testing	Sequential exploratory mixed methods design	186 hours of observation 42 interviews 93 documents	• Build crime laboratories' capacities for DNA testing • Train police on the utility of forensic evidence throughout all phases of the criminal justice system as well as best practices in sexual assault investigations.	Sexual Assault Kit Best practices	Submission Training Testing Resources
Campbell, Fehler-Cabral, Pierce, Sharma, Bybee, Shaw, Horsford & Feeney (2015)	The Detroit Sexual Assault Kit Action Research Project	ARP Census Interviews Police report analysis Testing	1268 police reports 1595 kits tested	• Increase support services for survivors • Expand training for all service providers • Pursue testing of all previously unsubmitted kits and undergo country-wide assessment of scope of problem of untested kits • Support investigation, prosecution, and victim advocacy for all tested kits • Prevent the problem of unsubmitted kits from happening again by introducing new infrastructure, securing funding for tracking projects and implementing legislative change. • Police property storage policies should segregate kits from other types of evidence. Storage practices that separate kits from other evidence and store kits together may make it easier to recognise the problem and monitor kit accumulation. • Introduce information technology systems that allow practitioners from various disciplines to ascertain the location and status of each kit from the point it was collected in the exam through testing.	Sexual assault kit Protocol Practice	Training Testing Investigation Victim notification Resources Tracking Retention

				• State- and national-level technical assistance is necessary to work with law enforcement leadership to develop comprehensive policies regarding sexual assault investigations. • Policy makers need to consider how best to promote the disclosure of backlogs so that police departments will come forward and publicly report how many untested kits they have in custody. • Law enforcement agencies need to staff sex crimes units commensurate with their crime rates and the time and effort that these cases require. Funding specifically for this is also critical. • Law enforcement agencies that do not have written policies regarding kit testing should set such expectations and codify them into their standard operating procedures. • Training for law enforcement on dynamics of sexual assault, neurobiology of trauma and its implications for victim behaviour, and offender-focused investigations is necessary.		
Campbell, Pierce, Sharma, Feeney & Fehler-Cabral (2016)	Should Rape Kit Testing Be Prioritized by Victim-Offender Relationship: Empirical Comparison of Forensic Testing Outcomes for Stranger and Non-Stranger Sexual Assaults	ARP Census Testing	900 previously untested kits	• All kits should be tested regardless of case characteristics such as victim-offender relationship as they have an equivalent likelihood of producing CODIS hits. • Policies that promote DNA testing and population CODIS with eligible profiles may have long-term positive benefits for identifying criminals, establishing histories of repeat offending, and providing investigators and prosecutors with biological evidence that can be instrumental in holding offenders accountable for their crimes.	Rape kit Policy	Testing
Campbell, Pierce, Sharma, Feeney & Fehler-Cabral (2019)	Developing Empirically Informed Policies for Sexual Assault Kit DNA Testing: Is It Too Late to Test Kits Beyond the Statue of Limitations?	ARP Census Testing	700 previously untested kits	• Policies that exclude older, presumed SOL-expired kits from testing may be problematic as there may be substantial numbers of CODIS-eligible DNA profiles within those kits that would never be entered into the federal database. • Populating CODIS is critical for its long-term utility to police and prosecutors and policies that systematically exclude certain types of profiles may decrease the value of CODIS as a tool for identifying serial criminal offenders. • Policies that promote DNA testing and populating CODIS with eligible profiles can have long-term positive benefits for	Sexual assault kit Policy	Testing

				identifying criminals and holding them accountable for their crimes.		
Campbell, Feeney, Pierce, Sharma & Fehler-Cabral (2018)	Tested at Last: How DNA Evidence in Untested Rape Kits Can Identify Offenders and Serial Sexual Assaults	Testing	900 previously untested kits	• Importance of timely testing of kits. Study showed instances in which offender had a preceding qualifying offense in CODIS so testing the kit may have brought quicker resolution. Also instances wherein kits were not tested, cases were not pursued, and the assailant went on to rape other women. • There is value in testing old kits • Importance of training for law enforcement personnel on uses of DNA evidence throughout all phases of criminal proceedings • Improve availability, accessibility, and affordability of DNA testing for timely testing	Rape kit Policy Practice	Testing Training Resources
Campbell, Shaw & Fehler-Cabral (2018)	Evaluation of a Victim-Centred, Trauma-Informed Victim Notification Protocol for Untested Sexual Assault Kits (SAKs)	ARP Evaluation of protocol	41 cases	• Victim characteristics (age at time of assault), the assault (victim-offender relationship), and initial reporting experience (how long ago it occurred and degree of secondary victimisation experienced) may affect later decisions regarding reengagement. • Providing survivors with choices, resources and support is essential for reengaging them in the investigation and prosecution process. Re-establishing trust with survivors is critical.	Sexual assault kit Protocol	Approach Victim notification
Corrigan (2013)	The New Trial by Ordeal: Rape Kits, Police Practices, and the Unintended Effects of Policy Innovation	Interviews	167 rape care advocates at 112 RCCs across 6 states	• Policy makers interested in promoting SANE programs to improve victim care and criminal case outcomes should not assume that these programs will be implemented or understood as victim-centred initiatives in all areas. • Police attitudes need to be taken into account when legislators attempt to improve medical and legal responses to sexual violence. • It is critical to understand how police think about and employ SANE programs in order to produce better criminal justice outcomes. • Ensuring that SANE programs benefit rather than harm victims may require shifting institutional locations and control over post-rape medical care. Such programs seem to work most effectively when developed and administered by	Rape kits Practices Policy	SANE programme

				rape crisis centres rather than by hospitals or law enforcement.		
Feeney, Campbell & Cain (2018)	*Do You Wish to Prosecute the Person Who Assaulted You?:* Untested Sexual Assault Kits and Victim Notification of Rape Survivors Assaulted as Adolescents	Case file review	15 survivors	• Victim's initial experiences with reporting to law enforcement have a strong and potentially long-lasting effect on their engagement (or re-engagement) with the system. • Importance of empathetic response and trainings on secondary victimisation for law enforcement personnel	Sexual assault kits Practice	Training Victim notification
Gokdogan & Bafta (2010)	Development of a Sexual Assault Evidence Collection Kit – The Need for Standardization in Turkey	Survey	543 medical personnel	• Importance of maintaining the chain of custody • The necessary resources, such as federal guidelines for kits, have to be established and be made available to recruit, train and supervise medical personnel *Evidence collection kit specifications:* • Container specification • Kit components • Kit printed materials • Additional examination materials *Container specification:* • Kit box-sealed via box-top integrity sealing tabs *Kit components* • Foreign material bag containing one 20"x30" white paper sheet • Large and small paper bags and miscellaneous envelopes • Small cardboard boxes • Known blood collection tubes • Known urine specimen bottle • Paper sheet and comb for pubic combing • Nail evidence retrieval devices • Pre-packaged swabs • Frosted-end slides • Evidence sealing tape • Saliva retrieval devices *Kit printed materials* • Outside cover label • Inside cover inventory label • Step-by-step instruction label	Sexual assault kit Practice	Kit components

				• Authorization for collection and release of evidence and information form • Medico-legal report from with anatomical drawings • Chain of custody form • Forensic science laboratory request/report • Sexual assault follow-up examination and information form *Additional examination materials* • Disposable vaginal speculum (35mm) • Disposable anoscope (35mm) • One-use cam • Photomacrographic scale (35mm) • Bottle of toluidine blue dye • Foley catheter		
Goodman-Williams, Campbell, Sharma, Pierce, Feeney & Fehler-Cabral (2019)	How to Right a Wrong: Empirically Evaluating Whether Victim, Offender, and Assault Characteristics can Inform Rape Kit Testing Policies	Testing	900 previously untested SAKS from Detroit	• The criminal justice system may benefit from testing a wider variety of kits than has previously been believed. • Testing previously unsubmitted kits produces a substantial number of CODIS hits. Testing all of these forgotten rape kits may yield information that is useful to system personnel. • Testing previously unsubmitted kits may be a step in addressing the institutional betrayal victims experienced when their kits were initially ignored. • Policies that encourage the testing of these kits and addition of resulting profiles into CODIS may offer long-term benefits for victim healing, offender identification and public safety.	Rape kit Policies	Testing
Grey, Arthur, Tomenko, Shaler & Snell (2018)	Maine Sexual Assault Kit Study	Survey Focus groups Reviews Interviews	132 law enforcement agencies, 34 hospitals, 30 SAFEs, 95 prosecutors.	• Invest state funding in police crime lab for dedicated staffing to provide ongoing analysis of kits as needed to maintain minimal backlog. • Implement staffing incentives for recruitment of and retention of SAFEs. • Develop state-wide standards for training of non-SAFE emergency dept to provide medical forensic exams. • Implement curriculum on collection and provide it to all cadets as part of criminal justice academies. Ensure ongoing training of law enforcement to include sexual assault response and handling of the kit.	Sexual assault kit Best practices	Approach Training Collection SANE programme Victim notification Resources Retention Tracking Audit/Inventory

				• Develop legislative requirements for the retention of all kits (reported and anonymous) by law enforcement for a minimum of the statute of limitations for gross sexual assault OR after all post-conviction options have been resolved, whichever is longer. • Develop and implement a state-wide model for prosecutorial review of all sex crime cases with kits. • Develop, implement, and invest funding in a kit tracking system. • Conduct an audit of all kits currently in storage at law enforcement state-wide. • Review current victim notification procedures for all cases when a kit has been collected, regardless of prosecution of the case. • Explore the status of regional response teams and/or other multidisciplinary teams and increase use of case review.		
Hendrix, Strom, Parish, Melton & Young (2020)	An Examination of Sexual Assault Kit Submission Efficiencies Among a Nationally Representative Sample of Law Enforcement Agencies	Mixed methods – surveys and site visits	222 labs, 147 responded.	• Policy makers at all level of government must recognise that success cannot be achieved without addressing the lack of adequate staffing. Well-trained staff are essential not only to making inroads in creating and effective system that is responsive but also in establishing steps to sustain and build on the progress that has been made. • Agencies that do not have submit-all policies should at the minimum have clear and detailed guidance for when kits should be submitted. • Agencies should have a mandatory policy for providing written and standardised justification for why kits were not submitted, which will help to provide some measure of quality assurance and protect against scrutiny and submission decisions down the road. • Agencies need to implement policies that require routinely and proactively retrieving kits from health care/medical facilities in addition to policies that help push agencies to develop specific plans for coordinating kit evidence retrieval and chain of custody with their SANE counterparts.	Sexual assault kit Policies	SANE programme Submission Resources

Human Rights Watch (2010)	"*I Used to Think the Law Would Protect Me"* Illinois's Failure to Test Rape Kits	304 interviews, on-site visits, record review	Rape kit data from 147 agencies on status of 7494 kits booked into police storage over 15 years	Recommendations: *To general assembly* • Pass legislation requiring law enforcement to notify victims of the testing status of their rape kit within 3 months of its collection and periodically thereafter until testing is completed • Increase funding, if not, establish uniform, objective statutory criteria for how rape kit testing should proceed. These criteria should require that felony sexual assault cases cannot be rejected or closed until a rape kit in the case has been tested. • Create a permanent rape kit task force to exercise oversight of the implementation of relevant legislation • Approve legislation to increase funding for SANE program and provide incentives for hospitals to employ full-time SANEs *Office of attorney general* • Efforts to operate task force: include rotating formal representatives from various stakeholders in the system and hold monthly meetings and which should be open to the public • Continue public records training for law enforcement to ensure private information of crime victims or suspects is not released to third parties as part of a public records request *To local law enforcement departments* • Create a formal system to track all rape kits collected and to determine the status of a rape kit at any stage in the storage or testing process • Create a law enforcement unit tasked with investigating cold hit leads from the rape kit backlog • Create a permanent sexual assault unit to handle all sex crimes investigations, whose officers receive training in victim sensitive interviewing and interrogation of the suspect • Implement a system to inform victims of the status of their rape kit test: 1) identify an officer with specialised expertise in conveying sensitive information to victims; and 2) create a policy to require law enforcement to notify victims of their rape kit's testing status within three months of its collection	Rape kit Standards	Approach SANE programme Testing Victim notification Resources Tracking Oversight

				• Require law enforcement officers to participate in training in public records responses *To crime labs:* • Create monthly public reports on number of rape kits tested each month, including time taken for testing's completion • Establish a system for simultaneous, electronic notification of crime lab, law enforcement, and prosecutors when a DNA profile matches a profile in CODIS • Address crime lab capacity concerns by securing funding and space for DNA analysts required to test every booked kit in a timely manner • Report to governor, general assembly and attorney general on implementation of Act • Prioritize funds from programs for testing of rape kits *To state's attorney offices:* • Create uniform, state-wide guidelines for how cases are reviewed which would: *1) require that a case not be rejected until a standard number of investigative procedures have occurred, including testing a kit where one is available, interviewing all witnesses in case and interviewing both victim and suspect *2) Ensure that acquaintance rapes are subject to the same standards of proof as stranger rapes *3) Require victim-centred training for all attorneys who may interact with victims • Implement a "cold hit" tracking program, which would track the outcomes of kit testing on rape investigations, arrests, charges, prosecutions, dismissals, convictions and exonerations • Create a special unit tasked with pursuing prosecutions from investigative leads generated from the testing of the backlog • Oversee law enforcement implementation of victim notification policies *To criminal justice information authority:* • Create data and technical support systems to assist local and state law enforcement with tracking kit evidence, including location, testing status and investigative outcomes.		

				• Create a uniform data tracking form which all law enforcement must use to track their kit evidence. • Create a case registry, which would track the process of cases from report to final disposition *To hospitals:* • Work with other hospitals in densely populated regions to ensure at least one hospital has a specialised treatment centre for victims • Provide administrative and funding support for nurses who wish to receive SANE training • Allow certified SANE nurses who are not emergency room nurses to practice within the hospital's emergency room, as standard with national best practices		
Kerka, Heckman, Albert, Sprague & Maddox (2018)	Statistical Modelling of the Case Information From the Ohio Attorney General's Sexual Assault Kit Testing Initiative	Construction of logistic regression model	2500 kits	• Kits should be submitted to a lab as soon as possible following collection – as additional time passes, the probability of obtaining CODIS eligible DNA profiles from samples within the kit may decrease. • If kits cannot be submitted to labs immediately, standard collection techniques and storage protocols should be followed in order to reduce the probability of potential DNA loss or degradation. • If the victim reported a specific region of the body where the sexual assault occurred, forensic samples directly related to the region should be tested initially. If information regarding the type of assault is not available to the analyst, vaginal swabs, skin stain swabs, and underwear crotch cuttings and/or swabs should be examined first in order to increase the probability of obtaining a CODIS eligible DNA profile. • Testing lip swabs, penile swabs, hairs with roots, fingernail scrapings, and oral swabs for DNA does not tend to yield CODIS eligible DNA profiles as often as other forensic sample types. These samples should be tested if specific case details encourage their analysis. • If case information from the police report or nurse notes suggests that multiple samples may yield the same DNA profile, there is no need to test all of the corresponding samples initially if the victim reports one assailant and does not report consensual sexual activity around the time of the	Sexual assault kit Model	Collection Submission Testing Retention

				assault/kit collection. This will help eliminate excess, repetitive testing. • Consent partner elimination standards should always be collected and submitted with the corresponding kit if possible, to ensure that consent partner DNA profiles are not being uploaded into CODIS.		
Lovell, Luinais, Flannery, Bell & Kyker (2018)	Describing the process and quantifying the outcomes of the Cuyahoga County sexual assault kit initiative	Case study Process map	n/a	• Stranger kits should not be prioritised for testing if the purpose of that prioritisation is to obtain DNA hits. Non-stranger kits should also be submitted as they are equally likely to yield a DNA hit, thereby providing corroborating accounts of sexual assault, confirming the identity of the offender and even helping solver other crimes when linked via DNA. • Embedding victim advocacy into the criminal justice process has the potential to not only reduce secondary victimisation but also increase victims' engagement in the process via more supportive and victim-centred practices. • Cold case investigations could benefit from the more effective practices of the kit initiative process such as the country-wide multidisciplinary team approach and the degree of transparency in the process.	Sexual assault kit Practices Policy	Approach Testing
National Institute of Justice (2017)	National Best Practices for Sexual Assault Kits: A Multidisciplinary approach	Framework	n/a	*Multidisciplinary approach:* • A collaborative multidisciplinary approach should be implemented • Responders should use a victim-centred and trauma-informed approach when engaging with victims • Agencies should collaborate and involve victim advocates early in the process to create a more victim-centred approach to criminal justice process • Multidisciplinary approach should seek out and include voices from underserved or vulnerable populations in the community's responses to cases *Medical forensic exam and evidence collection* • Establish minimum standards for a kit and until that time, states should create a standardised kit for cases that addresses the minimum criteria in the National Adults/Adolescents Protocol	Sexual assault kits Best practices Protocols	Approach Training SANE programme Collection Submission Testing Retention Victim notification Audit/Inventory

				• Exam should be performed by a health care professional specifically trained in the collection of evidence relating to cases such as a SANE or other appropriately trained medical professional. • Guided by victim history, samples should be collected from any victim seeking care as soon as possible and up to five days or longer post-assault. Regardless of time frame, reimbursement should be provided for medical-forensic exam. • Examiners should concentrate the collection of samples by using no more than two swabs per collection area so as not to dilute the biological sample. • Sample collection should ideally be completed by a medical-forensic examiner or appropriately trained individual • Masked and gloves should be used by all medical-forensic care providers and others in collection and packing of evidence. • Policies for medical-forensic record retention should be created in accordance with statutes of limitations and other criminal justice needs rather than with traditional parameters for medical record keeping, storage, retention and destruction. *Transparency & accountability of law enforcement for SAKs* • Agencies and labs should partner to use one evidence tracking system • Federal government should develop an Electronic Evidence Exchange Standard for the data standards associated with physical forensic evidence • Kits should be received by local law enforcement agency from the hospital or clinic as soon as possible, ideally, no later than three business days from collection of kit, or specific by statute. • Law enforcement or labs should be responsible for the long-term storage of all kits, unless applicable law provides otherwise. • A comprehensive inventory should be conducted to determine the number, status, location, and individual descriptive information for all kits.		

				• Agencies should perform an annual audit verifying that all kits in property room are present and in their specific location. *Investigative considerations* • All kits that the victim has consented to reporting law enforcement should be submitted to the lab for DNA analysis. • Agencies should establish a system of accountability to ensure timely follow up on CODIS hits. • All personnel involved in sexual assault investigations should receive training in the neurology of trauma and specialised skills for interviewing victims. • Agencies should implement electronic records management systems that incorporate investigative workflows to improve case investigations and communication. *Processing kits in the laboratory* • With goal of generating CODIS-eligible DNA profile, if a lab is unable to obtain an autosomal CODIS-eligible DNA profile, they should evaluate the case to determine if any other DNA-typing results could be used for forensic investigative purposes • Forensic labs should have an evidence submission policy/protocol that includes the prioritisation of evidentiary items • Labs should consider the volume of cases and use business process improvement tools to review their input/output, identify where bottlenecks occur, and determine if a high-throughput approach to processing will achieve efficiencies • Labs should consider incorporating robotics and/or automation at each step of DNA process for most efficient high-throughput approach • Labs should consider the use of standardised reporting templates, a paperless system, and specialised software to assists in the interpretation of DNA mixtures, to streamline and reporting of DNA results.		

				Post-Analysis communication and policy considerations • Jurisdictions should have a victim notification protocol for informing victims of the status of their cases, including those wherein kits are analysed after many years • Jurisdictions that do not have evidence retention laws should adopt biological evidence retention policies/protocols that are victim-centred and preserve evidence from uncharged or unsolved reported cases for 50 years or the length of the statute of limitations, whichever is greater. • Unreported kits should be retained for at least the statute of limitations of maximum of 20 years. • States that have not already done so should consider eliminating the statute of limitations for sexual assaults. • Jurisdictions should develop a communication strategy to increase transparency and accountability to stakeholders within communities regarding the response to sexual violence. • Mandatory training for those responding to sexual assault should be incorporated into every agency's strategic plan.		
Patterson & Campbell (2012)	The Problem of Untested Sexual Assault Kits: Why Are Some Kits Never Submitted to a Crime Laboratory?	Exploratory study	244 adult sexual assault cases	• Decision to submit kits should be evaluated by multiple system personnel (supervisor, prosecutor, crime lab scientist) instead of relying on a single investigator. • Jurisdictions should consider developing a protocol that outlines who should be consulted, as well as decision making tree to follow when deciding whether a kit needs analysis. Law enforcement personnel should also be required to document their rationale when they do not submit a kit. • To prevent sense of betrayal of victims who underwent an exam with the hopes of being supported by evidence, medical examiners, crime lab and law enforcement should have a consistent protocol on the eligibility for the exam and kit submission. • Lack of funding remains a barrier for crime labs to analyse all kits. Policies that prioritise cases may be helpful to expedite analysis of those kits that are critical to the progression of a case.	Sexual assault kit Practice	Training SANE programme Submission Testing Resources Tracking

				• Labs may want to reconsider developing a tracking system of all collected kits regardless of submission. System should provide important data about funding needs, help determine policy adoption by Law enforcement, and identify particular departments that submit substantially less kits than others, which could inform training needs.		
Peterson, Johnson, Herz, Graziano & Oehler (2012)	Sexual Assault Kit Backlog Study	Case tracking & evaluation of test results Focus group	371 backlogged cases and 371 non-backlogged cases = 742 in total	• Testing of all backlogged kits is not recommended. Before testing, goals of agencies must be clearly defined, investigation status of cases determined, and agencies become familiar with short- and long-term benefits of testing. For future testing, unsolved stranger cases should be primary focus. • Advisory committees, composed of law enforcement, medical and forensic reps should collaborate to establish criteria for future testing. Agencies should commit resources to share and compile data at key decision points in investigation and prosecution processes and work toward the development of consolidated databases and models to better predict successful case outcomes and role of evidence. • Crime labs need various types of investigative and medical information in order to begin their analyses of kit evidence. Labs should routinely receive and review investigator case files, medical victim exam reports, and CODIS status information before commencing their exam procedures	Sexual assault kit Policy	Testing Resources
Shaw & Campbell (2013)	Predicting Sexual Assault Kit Submission Among Adolescent Rape Cases Treated in Forensic Nurse Examiner Programs	Case study Focus groups Surveys	393 adolescent sexual assault cases in 2 communities	• Importance of understanding that the kit is only one piece of a larger case. Legal cases need to be developed in their entirety with the kit playing a supportive role. While community-wide protocols/policies detailing kit submission may decrease the number of unsubmitted kits, the same protocols/policies may not attend to the larger problem of how cases are treated in the current system. • Importance of considering the role of law enforcement in the larger system response to sexual assault. The problem of unsubmitted kits needs to be examined within this system. • System-wide commitment to increase kit testing across communities.	Sexual assault kit Protocol	Submission Testing

Shaw, Campbell, Hagstrom, O'Reilly, Krieger, Cain & Nye (2016)	Bringing Research into Practice: An Evaluation of Michigan's Sexual Assault Kit	Focus groups Surveys	5 medical sites	*Organisation of kit* • Move patient brochure and SAFE response to top of kit with other paperwork (to remind to complete/provide) • Place widgets in order in which they are completed – oral, buccal, external genitalia, rectal/anal, vaginal, cervical (this will aid in completion of kit) • Increase the size of the box or decrease the size of the envelopes (the size of the swab envelopes could be decreased to match the size of the drying boxes) • Remove glue from envelopes and replace with self-adhesive (they should never be licked to be sealed) *Widgets* • Add instructions to the barcode bag (not clear what it is for) • Increase size of undergarment bag (tampon/diapers/sanitary napkin envelope) • Change labelling of body/fingernail/miscellaneous envelope so it requires the medical provider to indicate side of body (left or right) and body location (not asked for in a consistent way), and what the medical provider thinks might be found there (not frequently indicated and lab doesn't know what to screen) • Enlarge slide target area (not large enough to get enough cellular materials) • Remove the word 'rectal' entirely from swabs, smears, envelopes etc (no need for these in most cases – have vaginal and anal – and may mislead) • Separate perianal swabs and smears from anal swabs and smears (perianal is external and should be collecting in every case of vaginal penetration, even without anal penetration, due to vaginal leakage; anal is internal and should be collected in the case of anal penetration)	Sexual assault kit Practice Policy	Kit components
Shaw, Coates & Janulis (2020)	High rates of sexual assault kit submission and the important role of place	Mixed methods	4399 cases	• Examine distinguishing features of states as a whole, as well as communities within it, in order to identify the factors that support their relative success. • Examine state and community level factors that may promote higher rates of kit submission • Investigate how long it takes for kits to be submitted to the lab for analysis and identify if there are specific police	Sexual assault kit Practice	Submission

				agencies responsible for transporting kits from select areas that hold onto kits for a longer time, perhaps in order to make fewer visits • Submitted kits must be tested, the findings must be communicated back to investigators and prosecutors who must treat the findings as one piece of their larger criminal investigations, investigations must lead to criminal charges (when appropriate), and charges must be pursued (when appropriate)		
Strom, Hendrix, Parish, Melton & Feeney (2020)	Estimating Crime Laboratory Efficiency in the Testing of Sexual Assault Kits	Mixed methods	Survey data from 132 crime labs	• Lab efficiency cannot be surrogated by new equipment or software but required having enough trained and qualified analysts • Labs should test kits and avoid secondary evidence unless the kit is negative • Resources to increase processing capacity: increasing staff, redefining what technicians can do on a case, dividing staff into specialised teams, diverting especially challenging data interpretation to handful of specially trained staff and increasing equipment in strategic ways with special consideration of how doing so will impact human labour and staffing needs • When hiring analysts and purchasing new equipment, make these purchases at a ratio of 3-4 analysts for every equipment set to increase productive capacity with smallest impact on budget	Sexual assault kit Practices Policies	Resources
Wells, Campbell & Franklin (2016)	Unsubmitted Sexual Assault Kits in Houston, TX: Case Characteristics, Forensic Testing Results, and the Investigation of CODIS Hits	ARP Testing	493 unsubmitted kits	• Jurisdictions should collect data and report results that describe the characteristics of cases with unsubmitted kits, the forensic testing results, and criminal investigation outcomes that follow from testing = descriptions will systematically improve collective understanding of cases and testing results. • Future research should compare similar groups of cases that differ only in terms of whether or not a kit was submitted and tested. This will provide an understanding of risk factors linked to unsubmitted kits. • Jurisdictions should be prepared for workload that results after labs begin testing unsubmitted kits = development of victim notification protocols and collaboration between	Sexual assault kit Practices	Approach Submission Testing Victim notification

				agencies, specialised training for investigators and proper follow up procedures, prosecutors prepare for workload and advocates play critical role in ensuring appropriate victim-centred responses are implemented. • Gather baseline information about current practices to identify strengths and weaknesses in current responses to sexual assault. • Attend to importance of victim engagement and participation. • Consider use of kit testing prioritisation system even when all unsubmitted kits will be tested. • Measure and report CJS outcomes of cases after testing. • Measure broader set of outcomes in addition to results of criminal cases.		
Wentzlof, Kerka, Albert, Sprague & Maddox (2019)	Comparison of Decision Tree and Logistics Regression Models for Utilization in Sexual Assault Kit Processing	Validation study	2500 kits	• The variable of the number of years between kit collection and kit submission determined to no longer indicate predictive power as to whether or not a kit will yield a CODIS eligible DNA profile.	Sexual assault kit Model	Testing
Ylang (2016)	Examining Race and Sexual assault Kit Submission: A Test of Black's Behaviour of Law Theory	Review	1826 backlogged and 339 non-backlogged kits	• Police organisations should consider that clearing kits by submitting and testing them can be beneficial to overall clearance rates of cases • Police submission of kits needs to depart from evaluating priority based on whether the victim knows the attacker • Police organisations should continually and actively find ways to deal with incoming kits instead of placing them in storage • As police organisations have a common goal of maximising clearance rates, it makes sense to test kits regardless of victim-offender relationship so as to yield CODIS hits that establish if an offender has multiple victims • Ensure sensitivity training for police investigators to make themselves aware of their own biases and how they project themselves to victims	Sexual assault kit Practice	Training Submission Testing