A Sociolinguistic Profile of the Zeem Cluster [zua] Languages of Bauchi and Plateau State, Nigeria

Ken Decker and Thelma Araokanmi
A Sociolinguistic Profile of the Zeem Cluster [zua]
Languages of Bauchi and Plateau State, Nigeria

Ken Decker and Thelma Araokanmi

SIL International®
2022
As a peer-reviewed journal for original research articles, *SIL Electronic Survey Reports* (ISSN: 1559-1417) has been well known since 1999. The SIL journal title was changed to *Journal of Language Survey Reports*, starting with the first issue in 2021.

**Fair-Use Policy:**
Documents published in the *Journal of Language Survey Reports* series are intended for scholarly research and educational use. You may make copies of these publications for research or instructional purposes (under fair-use guidelines) free of charge and without further permission. Republication or commercial use of *Journal of Language Survey Reports* or the documents contained therein is expressly prohibited without the written consent of the copyright holder.

**Orphan Works Note:**
Data and materials collected by researchers in an era before documentation of permission was standardized may be included in this publication. SIL makes diligent efforts to identify and acknowledge sources and to obtain appropriate permissions wherever possible, acting in good faith and on the best information available at the time of publication.

**Series Editor**
Angela Kluge

**Managing Editor**
Eric Kindberg

**Copy Editor**
Eleanor J. McAlpine

**Compositor**
Bonnie Waswick
Abstract

This report describes a sociolinguistic survey conducted among the communities of a group of language varieties previously described as the Zeem [zua] cluster, in Dass and Toro Local Government Areas (LGA), Bauchi state, and Jos East LGA, Plateau State, in central Nigeria. These language varieties are classified as Afro-Asiatic, Chadic, West, B, B.3, Zaar proper (Eberhard et al. 2021a). Blench (2020a) classifies the language as; Chadic, West Branch B, Zaar group. There are less than 1,000 speakers of Cha’ari and about 3,000 speakers of Dyarim. There may be about 3,000, 2,000, and 1,500 ethnic Dokshi, Tulai, and Zeem, respectively.

This study of the Zeem cluster varieties reveals that there are five distinct languages: Cha’ari, Dokshi, Dyarim, Tulai, and Zeem. There are no dialects within the individual languages. Three of these languages are no longer actively spoken – Dokshi, Tulai, and Zeem. The people have shifted to speaking Hausa. Cha’ari and Dyarim are still actively used across most domains in their respective communities. This study of the Zeem cluster languages is part of a larger initiative to provide sociolinguistic information to organizations, development agencies, and local communities who are working collaboratively toward meeting the language development needs of the ethnolinguistic groups of Nigeria. The goal of this research is to gain a better understanding of the role of Cha’ari, Dokshi, Dyarim, Tulai, and Zeem, and other languages, in the lives of these Zeem cluster peoples. With this goal in mind, this study utilizes linguistic and sociolinguistic data collected using group discussions and wordlist collection.
Contents

Languages Mentioned in This Report
1 Introduction
2 Purpose and research questions
3 Previous research
4 Research methods
  4.1 Participatory discussions and Dialect Mapping
  4.2 Select leader interviews
  4.3 Observation
  4.4 Analysis of qualitative data
  4.5 Wordlist collection and analysis
5 Geographic, demographic, and social description
  5.1 Language and people identification
    5.1.1 Cha’ari
    5.1.2 Dokshi
    5.1.3 Dyarim
    5.1.4 Tulai
    5.1.5 Zeem
  5.2 Location, settlements, and administrative division
    5.2.1 Cha’ari
    5.2.2 Dokshi
    5.2.3 Dyarim
    5.2.4 Tulai
    5.2.5 Zeem
  5.3 Population
    5.3.1 Cha’ari
    5.3.2 Dokshi
    5.3.3 Dyarim
    5.3.4 Tulai
    5.3.5 Zeem
  5.4 Origins of the Zeem cluster groups
  5.5 Other social descriptions
    5.5.1 Education and Literacy
    5.5.2 Religions
6 Influence from other languages
  6.1 Language contact
    6.1.1 Cha’ari
    6.1.2 Dokshi
    6.1.3 Dyarim
    6.1.4 Tulai
    6.1.5 Zeem
  6.2 Multilingualism
    6.2.1 Cha’ari
    6.2.2 Dokshi
    6.2.3 Dyarim
    6.2.4 Tulai
    6.2.5 Zeem
7 Language vitality
  7.1 Functions of languages in the repertoire of the Zeem cluster languages
    7.1.1 Cha’ari
    7.1.2 Dyarim
7.2 Means of acquiring languages in the repertoire of the Zeem cluster languages
7.3 Motivation for using languages in the repertoire of the Zeem cluster languages
7.4 Environmental support for the maintenance of minority languages
7.5 Differentiation of languages in the repertoire of the Zeem cluster languages
7.6 EGIDS assessments for Zeem cluster languages
   7.6.1 Cha’ari
   7.6.2 Dokshi
   7.6.3 Dyarim
   7.6.4 Tulai
   7.6.5 Zeem

8 Linguistic relationships
   8.1 Classification
   8.2 Reported comprehension
   8.3 Phonetic inventory
   8.4 Lexical similarity within the Zeem cluster
   8.5 Phonological variation between Zeem cluster languages
   8.6 Discussion of analysis

9 Summary
10 Recommendations

Appendix A: Dialect Mapping Instructions and Group Sociolinguistics Questionnaire
Appendix B: Church Leader Questionnaire
Appendix C: Mosque Leader Questionnaire
Appendix D: School Teacher Questionnaire
Appendix E: Sample Observation Schedule
Appendix F: Wordlist
Appendix G: Extra Wordlist Data – Cha’ari and Dyarim Plurals
Appendix H: GPS Coordinates
Appendix I: Data Sources
References
Languages Mentioned in This Report

The following languages are mentioned in this report, with their ISO 639-3 code. The ISO 639-3 provides the international standard three-letter codes of language names, defining a unique identifier for each. Most of these names are also used to refer to the ethnic group which speaks the language as their heritage language. Often the names are used in the text primarily as a reference to the ethnic group. See § 5.1 for more on the names of languages in this report.

- Arabic [arb]
- Bankal [jjr]
- Baraza, reported to be a dialect of Dass [dot]
- Bijim [jbm]
- Bole [bol]
- Burku [bbt], also known as Mburku
- Buli [xxx],¹ formerly considered a dialect of Polci [plj]
- Cara [cfd]
- Char or Chaari, alternate spellings for Cha’ari
- Cha’ari [xxx], formerly considered a dialect of Zeem [zua]
- Choogen [tgd], also known as Ciwogai
- Danche, an alternate name for Cha’ari
- Dass [dot], three dialects were referenced, Dott, Durr-Baraza-Dass, and Zumbul
- Dir [xxx], formerly considered a dialect of Polci [plj]
- Dokshi, a dialect of Zeem [zua]
- Duguri [dbm]
- Dyarim [xxx], formerly considered a dialect of Zeem [zua]
- English² [eng]
- Firan [fir]
- Fulfulde [fuv]
- Fyer [fie]
- Geyi, may refer to Gyaazi [gyz], Fyalu-Mugan, or Bu [zbu]
- Guruntum-Mbaaruu [grd]
- Guus, an alternate name for Sigidi, a dialect of Saya [say]
- Gwandara [gwn]
- Gwak [jgk]
- Gyaazi [gyz], formerly known as Geji
- Hausa³ [hau]
- Ibaas [cen]
- Igbo [ibo]
- Izere [izr]
- Jarawa, may be used to refer to Bankal, Izere, or Gwak

¹ [xxx] indicates that the language has no ISO code, but one is being requested.
² In Nigeria, there is a variety of English recognized by linguists as Nigerian English and another called Nigerian Pidgin English by linguists. However, both are frequently referred to colloquially as English. We did not pursue specification in this distinction
³ There are different dialects of Hausa, but we did not pursue specification of this distinction.
• Jere [jer], two dialects are referenced, Gusu and Rabina
• Jimi [jmi]
• Juu [juu]
• Kadung [dkg]
• Kir [kkr]
• Kirfi [kks], also known as Giowo
• Koenoeem [kcs]
• Kofyar [kwl]
• Kusur-Myet [tdl], also known as Sur
• Langas [xxx], formerly considered a variety of Polci [plj], also known as Nyamzak
• Laru [lan]
• Lemoro [ldj]
• Luksh or Lushi, alternate names for Dokshi
• Margi, unknown, possibly Central Marghi [mrt]
• Mbarimi [xxx], formerly considered a variety of Polci [plj], also known as Baram
• Mburku, an alternate name for Burku [bbt]
• Mindat [mmf]
• Miship [mjs]
• Nigerian Pidgin English\(^1\) [pcm]
• Ngas [anc]
• Nteng [nqt]
• Pa'a [pqa]
• Pesse [xxx], formerly considered a variety of Polci [plj]
• Polci [plj], an alternate name for Pesse and the former name for the cluster of varieties\(^4\)
• Saya [say], two dialects are referenced, Zakse and Guus
• Shall-Zwall [sha]
• Sigidi, an alternate name for Guus, a dialect of Saya [say]
• Siri [sir], two dialects were referenced, Baba and Ningi
• Sya [scw], also known as Sha
• Tala [tak]
• Tiyaa [tty], also known as Boi
• Tulai, a dialect of Zeem [zua]
• Yoruba [yor]
• Zaar, an alternate name for Saya [say]
• Zangwar [zah]
• Zari [zaz], probably refers more specifically to the Zakshi-Zari dialect in this report. However, according to the *Ethnologue* (Eberhard et al. 2021a), there are no known speakers.
• Zeem [zua], also refers to a cluster of dialects, Zeem, Dokshi, and Tulai
• Zibinju [plj], also known as Zumbum
• Zul [xxx], formerly considered a dialect of Polci [plj]

---

\(^1\) For more on recent research into the Polci cluster see Decker et al. (forthcoming).

\(^4\) For more on recent research into the Polci cluster see Decker et al. (forthcoming).
1 Introduction

This report describes a sociolinguistic survey conducted among the communities of a group of language varieties previously described as the Zeem [zua] cluster in the Dass and Toro LGA, Bauchi state, and Jos East LGA, Plateau State, in central Nigeria. These language varieties are classified as Afro-Asiatic, Chadic, West, B, B.3, Zaar proper (Eberhard et al. 2021a). Blench (2020a) classifies the language as Chadic, West Branch B, Zaar group. There are less than 1,000 speakers of Cha’ari and about 3,000 speakers of Dyarim. There may be about 3,000, 2,000, and 1,500 ethnic Dokshi, Tulai, and Zeem, respectively.

The fieldwork was conducted from the 29th of March to the 2nd of April 2021 by Luther Hon, Adedamola Aregbesola, Lewinan Andrew, and Thelma Araokanmi, members of the SIL Nigeria language survey team. Ken Decker served as a consultant on the survey and provided writing assistance on this report. This survey report includes linguistic, sociolinguistic, geographic, and demographic information which we use to profile the sociolinguistic environment of the Cha’ari, Dokshi, Dyarim, Tulai, and Zeem peoples. This profile is used to draw conclusions about the possibilities for language planning and development.

In this report, we will show that the supposed five dialects in the Zeem cluster are independent language groups with different identities: Cha’ari, Dokshi, Dyarim, Tulai, and Zeem. There are no dialects within the individual languages. Three of these languages are no longer actively spoken – Dokshi, Tulai, and Zeem. The people have shifted to speaking Hausa. Despite their inability to speak their respective heritage languages, they still hold a strong identity to their ethnicity. Cha’ari and Dyarim are still actively used across most domains in their respective communities.

In this report, the survey purpose and research questions are described in § 2. The methods used in our research are explained in § 3. In § 4, we explain some limitations under which the research was conducted. Background research is discussed in § 5. In § 6, we describe some of the geographic, social, and cultural factors that may influence language use. In § 7, we look at the multilingual environment and multilingual proficiency. In § 8, we discuss factors affecting language vitality. In § 9, we describe linguistic data that was collected and how it was analyzed and we draw conclusions relevant to answering the research questions about variation within varieties of the heritage language. In § 10, we summarize what we have described in § 6 through § 9 and how it answers the research questions presented in § 2. Finally, in § 11 we present recommendations for future research and steps toward language development if the community desires to proceed with development activities.

This study is part of a larger initiative to provide sociolinguistic information to organizations, development agencies, and local communities who are working collaboratively toward meeting the language development needs of the ethnolinguistic groups of Nigeria. Collaborating organizations include SIL Nigeria, the Conference of Autochthonous Ethnic Community Development Associations (CONAECDA), Luke Initiative for Scripture Translation (LIST), Lutheran Bible Translators (LBT), Calvary Ministries (CAPRO), and the Kay Williams Educational Foundation (KWEF).

2 Purpose and research questions

The purpose of this study is to gather relevant sociolinguistic information for those who are working toward meeting the language development needs of minority ethnolinguistic groups. There are two major concerns when addressing language development needs, the environment for heritage language development and the meeting of multilingual needs.

The environment we are describing here includes the amount of linguistic variation within the language community, the attitudes toward linguistic and social variation within the community, and the attitudes toward language maintenance and shift. The long-term usefulness of heritage language

---

5 For more on the goals and process of language development, see Cooper (1989), and Spolsky (2004 and 2009).
development depends on the identification of an acceptable central\textsuperscript{6} variety to develop. The acceptability often depends on the perceptions and attitudes held by the people toward the social and linguistic variation. It also depends on good linguistic analysis. In general, it is not possible to develop an alphabetic orthography\textsuperscript{7} that attempts to unite too much variation.

Minority-language communities need people with multilingual proficiency. They need people who can access information available in languages of wider communication.\textsuperscript{8} The global predominance of languages of wider communication threatens the survival of minority languages, but multilingualism also offers many opportunities to those with proficiency. It is neither possible nor desirable to preserve monolingualism in a minority language. And the reality in most minority language communities is that they already speak a repertoire of languages. The challenge is to maintain heritage language use while addressing the communities’ needs to improve their proficiencies in other languages.

To address these realities, we investigated language variation, the repertoire of languages, attitudes toward other languages, literacy, and the vitality of the Zeem cluster languages. We also investigated the potential for the development of these languages. The following research questions were formulated to help focus the data collection and analysis:

- What do people call their language and its speakers?
- What evidence of variation between Zeem varieties can be identified?
- Which languages are used regularly within the Zeem cluster communities?
- What variation in language-use patterns is found in the Zeem cluster communities?
- What impact has multilingualism had on the vitality of the Zeem varieties?
- Which languages are used for reading and writing and what is the literacy rate?
- What are the social relationships of the various language communities in and around the Zeem cluster communities?
- What is the approximate population of each group?
- Where are any significant diaspora communities of speakers located?

3 Previous research


4 Research methods

Our data collection methods of data collection consisted of the following tools: group discussions and individual interviews, Dialect Mapping, observation, and wordlist collection. The collected data was correlated to ensure an accurate analysis (See Appendices A, B, C, and D for samples of the questionnaires, Appendix E for a sample observation schedule, and Appendices F and G for the wordlists.)

Data was collected in one village for each of the Cha’ari, Dokshi, Dyarim, Tulai, and Zeem communities. The research was conducted in Danshe, Lukshi, Kayauri, Tulai, and Zayam villages. These villages were identified as the main or central villages by members of their respective communities.

---

\textsuperscript{6} For more on the factors involved in the identification of a central variety, see Sanders ([1977] 1986) and Boone (2012).

\textsuperscript{7} For more on orthography development, see Cahill and Rice (2014).

\textsuperscript{8} For more on language vitality and multilingualism, see Lewis and Simons (2017).
4.1 Participatory discussions and Dialect Mapping

We facilitated group discussions in Danshe, Kayauri, Lukshi, Tulai, and Zayam. In each village, we first spoke to the chief to explain our purpose and to obtain permission to gather information from the people. In each village, the chief invited a group of people to attend a meeting. He specifically asked several community leaders to participate in the exercise. Group discussions in each village took place at the palace or house of the chief. A list of the participants in the group discussions is presented in table 1.

<table>
<thead>
<tr>
<th>Language name</th>
<th>Village</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cha’ari</td>
<td>Danshe</td>
<td>6 adult males, 2 adult females, and 2 youth</td>
</tr>
<tr>
<td>Dyarim</td>
<td>Kayauri Dutse</td>
<td>1 youth, 1 female, and 6 male adults</td>
</tr>
<tr>
<td>Dokshi</td>
<td>Lukshi</td>
<td>2 adult males</td>
</tr>
<tr>
<td>Tulai</td>
<td>Tulai</td>
<td>7 elderly males, 13 adult males, and 4 youth</td>
</tr>
<tr>
<td>Zeem</td>
<td>Zayam</td>
<td>3 elderly males and 2 adult males</td>
</tr>
</tbody>
</table>

The discussions were conducted in Hausa. Using the Group Interview Questionnaire (see Appendix A for a sample), we asked each group questions about their community’s:

- population
- contact patterns
- comprehension of their language regionally
- language vitality
- literacy and access to literature
- potential for language development project support

Working with these same groups, we also used a tool called Dialect Mapping. This tool is designed as a participatory activity that engages community members in the research (Hasselbring 2008). This participatory activity focuses the groups’ discussion on the geographic distribution of the language and interaction with neighboring language groups (see Appendix A for more details).

In these discussions, we made use of visual aids—papers, markers, pictures, drawings, strings, etc.—to help the groups think and talk through:

- villages where their language is spoken
- geographical arrangement of the villages in the form of a map
- contact with, and attitudes toward, neighboring languages
- perceived levels of comprehension in neighboring languages and languages of wider communication.

Responses given to our questions and information gathered from the Dialect Mapping sessions represent a consensus of the groups. Data from the group discussions is included in § 5 through § 8.

4.2 Select leader interviews

In addition to the group interviews, we also interviewed religious leaders in some communities. We did this in each village we visited except for Zayam, which had no church leader available at the time. We also interviewed imams at mosques in each village. These interviews provided information about the religious affiliations in the community, patterns of language use in churches and mosques, and the opinions of church and mosque authorities on language development. In churches, we also asked about the perceived benefit of vernacular scripture translations (see Appendices B and C for questionnaire samples).
We also interviewed the headmasters at Zayam and Lukshi schools. In Tulai, Danshe, and Kayauri Dutse, schoolteachers were interviewed. These interviews provided information regarding the number of staff and their roles, the number of children and their age ranges, the represented language groups, and language use and attitudes (see Appendix D for a questionnaire sample). Information from these interviews is discussed in § 5 through § 7.

4.3 Observation

As we observed language use in these villages, we noted how the choice of language differed depending on factors which included: the age category of the speaker and listener, the time, location, and topic of discussion (if possible). No one on the team was familiar with the local languages. However, we were able to identify when the people were not using Hausa or English, and, in this context, the possible alternative is that they were speaking either Cha’ari or Dyarim depending on the village. We also took note of the current state of development projects such as schools, roads, and health clinics in each community. We recorded our observations in a notebook and used the observed information to fill in an observation schedule. (See a sample of the observation schedule in Appendix D). The number of documented observations is relatively small, twenty-four in this case. However, these observations are helpful to either confirm or contradict the reported information. The information from observations is distributed in § 5 through § 7.

4.4 Analysis of qualitative data

Since the data we gather is limited, we can employ a simple “pencil and paper” method of analysis. We listed the major categories of information we are interested in: names, locations, population, physical infrastructure, occupations, cultural insights, intermarriage, religions, education, literacy, perceived dialectal differences, domains of heritage language use, language use in religious practices, other-language contact, language use with other language groups, domains of other-language use, proficiency in other languages, interest in language development, and attitudes toward other dialect and language groups.

Next, we went through the interview and observation forms and sorted the information into relevant categories. We collected different kinds of data; some involved estimations, some were opinions, and some were objective facts. When there are differences in quantifications, such as population estimates, we give the range. When there were differences in non-linguistic descriptions, for instance, the ease of access to an area, we referred to the surveyors’ memories. We also triangulated information, for example, correlating the interviewee’s self-evaluation of Hausa-speaking proficiency, observations of inter-group conversations in Hausa, and a team member’s evaluation of a conversation with a community member in Hausa. For a language such as English, which in this part of Nigeria is only acquired through education, we considered how much education the person had or how long schools have been available in the village in order to assess the possibility of higher proficiency. To analyze linguistic relationships, we compared what people perceive about their levels of comprehension with information learned from the wordlist analysis (see § 4.5).

Due to the limited amount and weakness of data, the data gathered only provides some tentative conclusions. We recognize that much of the information is anecdotal, but we are looking for inconsistencies. If there are no inconsistencies, then we consider that we may be gaining accurate answers to our research questions. In a few cases, when there were inconsistencies, we made a phone call to a contact in the village. However, there are times when inconsistencies remain unresolved, and we report them as such.

4.5 Wordlist collection and analysis

In this survey, we used the SIL Nigeria standard wordlist of 222 items for our elicitation of words for analysis. The wordlists were collected in Cha’ari, Dokshi, Dyarim, and Tulai. The Zeem people were unable to provide words in their heritage language. In each village, the chief and other language
speakers recommended the people who helped us. These people were chosen as good speakers of their respective heritage languages, and their parents were speakers of the language.

Wordlists were handwritten on a printed wordlist form, using the International Phonetic Alphabet (International Phonetic Association 2018). We elicited singular forms for nouns and plural forms for some nouns. We tried to elicit the infinitive form for verbs. Adjectives and conjunctions were elicited with an example noun. Audio recordings were made using a ZOOM Handy Recorder H2 recording device for documentation purposes. See Appendices F and G for the wordlists.

To make a linguistic similarity comparison of speech varieties, we used elements of phonostatistics and lexicostatistics to analyze these wordlists. Communities with speech varieties that have higher lexical similarity (more words in common) have a greater possibility of having higher levels of comprehension. SIL Nigeria uses the 70 percent threshold as a standard criterion for using lexical similarity to differentiate languages from dialects (International Language Assessment Conference 1989:9.5.2). Lexical similarity above 70 percent typically corresponds with acceptable levels of comprehension between the compared varieties. These may be considered closely related dialects. Lexical similarity below 70 percent corresponds with inadequate comprehension between the compared varieties. These are typically considered different languages. Likewise, communities with speech varieties that have higher phonological similarity (more sounds in common) have a greater possibility of having higher levels of comprehension. In addition, sociolinguistic factors also need to be considered.

These wordlists were then compared using the Wordsurv 7 wordlist analysis program (White and Colgan 2012). Although our primary method was to compare the surface-level phonology of words to determine phonostatistical comparisons, we did not attempt to identify cognates. A similarity comparison was calculated using a variation of the algorithm described by Blair (1990:31–33). This method is similar to that used by Gooskens et al. (2008). Blair attempted to create an unambiguous way to compare words. However, there are still uncertainties when deciding whether two words are similar enough to be counted as comparable. Thus, we calculated one comparison that included all marginal similarities and another calculation that excluded all marginal similarities. In this way, we arrived at a range of possible lexical similarity. The higher percentage number of the range is closer to the number of possibly cognate words; it also has a lower confidence level. The lower number is an estimate of the surface-level phonological similarity, and it will have a higher confidence level. We believe this gives a more realistic prediction of possible comprehension.

5 Geographic, demographic, and social description

In this section, we provide a brief description of some geographic, demographic, and social patterns that influence the environment in which the language is spoken. In some cases, these may have an influence on language-use patterns and language vitality. Some of the topics in this section will be revisited in § 7. Information from this section will be summarized in § 9 along with information from § 5 through § 9.

5.1 Language and people identification

Prior to this survey, Zeem has been described as a cluster of languages and dialects known as Cha’ari/Danshe, Dokshi/Lushi/Lukshi, Tule/Tulai, Dyarim, and Zeem. Based on classification by Shimizu (1978) and Caron (2009, 2011), Hammarström et al. (2022) lists Danshe, Lushi, and Tulai as varieties of Zeem. Ethnologue (Eberhard et al. 2021a), possibly based on Crozier and Blench (1992), gives Cha’ari as an alternate name for Zeem and includes Tulai, Danshe, Lushi, and Dyarim as dialects. Since none of these languages have an orthography, there are frequently many options for how the names are spelled. With the domination of Hausa as a language of wider communication, many names will have the suffix -anci indicating ‘the language of the …’ and -awa ‘the X people.’

---

9 The confidence level refers to the confidence that the sound changes are regular, based on an algorithm that compares the number of times phones are compared.
5.1.1 Cha’ari

Cha’ari was reported by Blench (2005) as an alternate name for Danshe. Cha’ari was reported as an alternate name for Zeem according to Eberhard et al. (2021a). Wente-Lukas (1985, citing Hansford et al. 1976) identified the name of the people as Danshe and Cha’ari as their language name. In this same literature, Wente-Lukas also referenced Hoffmann who referred to Danshe as a dialect of Zeem. CAPRO (2004) reported Danshe as the name of the language and its speakers and they made no reference to it being a dialect of Zeem. The name has also been spelled <Chari>.

The people identified their language and people’s name as [ʧāɾi] and said that they want it spelled as <Cha’ari>. Danshe serves as a village name and an alternate language name. The government and others refer to them as Danshe. The Hausa refer to them as Danchawa or Danshe. The name ‘Danshe’ is derived from a Cha’ari word, ‘dancha,’ the name of a local cotton tree. The word ‘Cha’ari’ on the other hand is derived from a nearby hill called ‘Gasicacha.’ The hill is significant to their historical account. Therefore, both ‘Cha’ari’ and ‘Danshe’ are ethnonyms. The name for a native person in their language is ‘M’ki’ Cha’ari,’ and the plural is ‘Koshik Cha’ari.’

5.1.2 Dokshi

Blench (2020a:105) identified Dokshi and Lukshi as alternate names of Lushi. Hansford et al. (1976) also listed Lukshi and Dokshi as alternate names of Lushi.

The people we spoke with referred to their language and people’s name as [dɔkʃi] and prefer the name to be spelled as <Dokshi>. However, they sometimes used the word ‘Lukshi’ interchangeably when referring to their language, people, or village name. The Hausa-given names for the language and people are Luksanci and Luksawa, respectively. The government refers to them as Lukshi. Luksawa and Lukshi are both used by others. Singular and plural speakers of the language are referred to as ‘Koshi’ and ‘Dokshi’ respectively. They do not consider themselves to be affiliated with the Cha’ari, Dyarim, Tulai, or Zeem.

5.1.3 Dyarim

Blench (2005) says that these people are known locally as Kaiwari, which is a version of Kaiyorawa which has been documented by others. However, he asserts that the proper name for the people and their language is Dyarim.

The people we spoke with identified their language and people’s name as [djáɾɛ̄m] and said that they prefer that it be spelled as <Dyarim>. They said that Kayaurawa is an alternate name given to them by the Hausa and Fulani groups. The government and others refer to them as Kayauri. Since they are most frequently identified as Kayauri, they accept it as an alternate name. The name Kayauri also functions as the prefix to some of their village names. A native is referred to as Mar (or Mən) Dyarim, and the plural form is Mài Dyarim in their language.

5.1.4 Tulai

Wente-Lukas (1985, citing Hansford et al. 1976:47) identified the group as Zeem, with its alternate name as Tulai (Tille); Gunn (1953:27) offered Tulawa as another name; and Shimizu (1978) listed Tule as an alternate name. BlENCH’s notation (2020a:95) is unclear as to whether he is saying Tulai is an alternate name for Zeem or simply a variety of Zeem as he says elsewhere.

The people we spoke with identified their language and people’s name as [túleī] and spelled as <Tulai>. Tulai also serves as the name of one of their villages. Tulanci and Tulawa are alternate Hausa-

---

10 There does not seem to be a justification for spelling the name with <a’a> since the name is pronounced with an unlengthened [a], but this is what they requested.
given names of their language and people, respectively. The names ‘Tille’ and ‘Tule’ were unfamiliar to them. They do not consider themselves to be affiliated with Cha’ari, Dyarim, Zeem, or Dokshi.

5.1.5 Zeem

Zeem is given as both the name of a cluster of varieties and as the name of one of those varieties (Blench 2020a:105). Eberhard et. al (2021a) gives Cha’ari as an alternate name for Zeem. The people we spoke with referred to their language and people’s name as Zeem. They said they were called Zaimawa by the Hausa, whose name for their language was Zaimanci. Since Zeem is no longer spoken (see § 8), they are simply referred to as Zaimawa. They are called Zaimawa by the government and other neighboring groups, also. They do not consider themselves to be affiliated with Cha’ari, Dyarim, Tulai, or Dokshi.

5.2 Location, settlements, and administrative division

These Zeem varieties have been spoken in the Dass and Toro LGAs, Bauchi State, and Jos East LGA, Plateau State, in central Nigeria. See Appendix H for GPS coordinates of some villages. See map 1 for the general area where people of the Zeem cluster live.

5.2.1 Cha’ari

Speakers of Cha’ari live in four villages in Jos East LGA, Plateau State and Dass LGA, Bauchi State. Three of these villages (Danshe, Taka-Lafiya, and Gombo) are located in Mai Gemu District in Jos East LGA, while Danshen-Lukshi is located in Lukshi District of Dass LGA. Danshe is about 17 km (10.5 mi.) east, southeast of Toro town. Danshen-Lukshi is about 17.8 km (11 mi.) east of Danshe. Danshe is the central and most populated village. This is also where festivals take place and the location of the paramount ruler. The only access to Danshe village is by a barely motorable road through rough terrain, which becomes virtually impassable during the rainy season.

5.2.2 Dokshi

The people of Dokshi can be found in two villages (Lukshi and Madaki) in Lukshi District in Dass LGA, Bauchi State. Lukshi is the central village where the paramount ruler resides. The Dokshi live in a very remote location, a long distance from any major road. However, the road into Lukshi is motorable and easily accessible. It is about 22 km (13.7 mi.) from Rinjim Mukur on the Jos-Bauchi Road.

5.2.3 Dyarim

Dyarim speakers are located in six villages of Toro district in Toro LGA of Bauchi State: Kayauri Sallah, Kayauri Dutse (Kayauri), Kufai Ruta, Jigawa, Pada, and Kayauri II (Kayaurin Sallake). Kayauri Dutse is the central village and where the language is reportedly best spoken. It also serves as the location for festival activities. Kayauri Dutse is only about 5.5 km (3.5 mi.) south of Toro town, but there are no roads most of the way.

Blench (2005:2) described the Dyarim settlement as one village divided into four parts: Maŋgami, Mantiri, Mambrenga, and Fadagoshi. We have no explanation for the discrepancies in our data.

5.2.4 Tulai

The Tulai people are located in nine villages in Toro District in Toro LGA, Bauchi State. Tulai, Pan Shanu, Mai Allo, Mai Ganga, Kwagga, Dandore, Dini, Jonga, and Jojori villages. Pan Shanu, Mai Allo, and Kwagga are on the Jos-Bauchi Highway about 40.3 km (25 mi.) northeast of Jos. Tulai village is
about 8 km (5 mi.) on good roads south of Rinjim Mukur. Tulai village is the central village where their paramount ruler lives.

**5.2.5 Zeem**

The Zeem people are located in two villages (Zayam and Gin-Gin) in Jama’a District in Toro LGA in Bauchi State. Zayam is the culturally central village of the two where the paramount ruler lives. Zayam village is on the north side of Zayam town on the Jos-Bauchi Road. Gin-Gin is accessible by a good road running north out of Zayam.

Map 1. Location of Zeem cluster villages

Source of roads, rivers, and state boundary: OSMF. Licensed by ODbL and CC BY-SA 2.0. Accessed 12 April 2022. Town locations and polygons added by the authors. They do not represent official locations.

**5.3 Population**

Estimating populations is a notoriously difficult and imprecise effort. In Nigeria, official census information is not available on specific language groups. There are several problems when asking the local people to make an estimate. First, particularly with languages spoken in many villages, they probably do not have any way of knowing the size of the overall population. They may include speakers of other languages. There can also be a difference between the number of speakers of a language and the size of the ethnic group. They may inflate their estimates to give the impression that they are larger than their actual numbers. To make such estimates is also difficult for outside researchers. For a language
spoken in many villages the researchers probably cannot visit every village, nor can they gather data from every household. It may also be difficult to differentiate populations when multiple groups are living in the same area. To estimate the number of speakers of the languages within the Zeem cluster we run into these same difficulties.

When possible, we try to use at least three different approaches to estimate the population. First, we consider what the local people estimate to be their total population. We also make an estimate based on our observations in the communities. Another way is to take an earlier published estimate and increase it by the estimated annual growth rate for Bauchi State, which is 3.5 percent averaged for the last fifty years (Brinkhoff 2021). These are usually estimates made by earlier colonial officials, ethnologists, or linguists. The Nigerian census does not gather data by language or ethnicity, and they do not compile data on smaller communities. In some cases, a health clinic or an official water board may have statistics from a local census. Another method is to estimate the mapped area for the language group multiplied by an estimate of the population per km², which Brinkhoff (2021) estimates as 142.6/km² for Bauchi State. We may also be able to count houses from a satellite image on Google Earth, which is then multiplied by an average household size. During this survey and others in the area, we were told that an estimate of twenty people per household should be close to accurate.

All these methods only provide rough estimates. However, if several of them are similar, then we feel like we might be getting close to reality. As shown in § 5.3.1 through § 5.3.6, when there is a wide discrepancy, we try to make estimates that tend to be generous and on the larger size. Due to the inaccuracy of the calculations and estimates, we round the figures to the nearest 1,000. A summary is presented in table 2.

The reason for making these estimates is to give development agencies an indication of the possible resources that are available for internal investment into a development project and the resources that will be required from external sources.

5.3.1 Cha’ari

The Cha’ari people reported a population of about 2,000. CAPRO (2004) reported the speakers of Cha’ari (Danshe) with a population of about 1,500 at the time of the survey. Applying the population growth formula to the CAPRO estimate we get a population of 2,349, which we will round to 2,500. The schoolteacher at Danshe primary school estimated that there are 120 school-aged children. If they are 25 percent of the population, that gives an estimated population of about 500 people. According to Brinkhoff (2021), the population density for Jos East LGA is 127 per km². We estimate that the area that the Cha’ari occupy is about 2 km², which does not include Danshen-Lukshi. If we include 100 people for Danshen-Lukshi, this only gives a population estimate of 350. A visual inspection of the satellite photos reveals about fifty compounds. If we estimate twenty people per compound, we get an estimate of 1,000 people. Compiled, these estimates cover a range from 350 to 2,500. This is a significant disparity. Therefore, we will report the median of 1,000 as the ethnic Cha’ari population. Since it was reported that the people of Danshen-Lukshi no longer speak the language, the number of speakers of the language would be less. (See § 8 on vitality.)

5.3.2 Dokshi

The people in Lukshi estimated their population to be about 7,000. Based on our observations of the village sizes, this is an unreasonably high estimate. Hansford et al. (1976:47), citing a local authority of the area in 1971, gave the population of the people to be 1,130. Applying the population growth formula, we get a population of 4,230, which we round down to 4,000. The headmaster of the Lukshi primary school estimated that there are 700 school-aged children. If they are 25 percent of the

---

11 We use the formula: \( NT = Pe^{rt} \), with \( P \) standing for the population figure as of the beginning date, \( e \) meaning exponential, \( r \) meaning Nigerian growth rate, and \( t \) meaning the time difference in years.

12 The last national census was 2006.

13 We use polygon mapping tools in Google Earth.
population, that gives an estimated population of about 2,800 people, rounded to 3,000. A visual inspection of the satellite photos reveals about 100 compounds. Estimating 20 people per compound, we get an estimate of 2,000 people. Compiled, these estimates cover a range from 2,000 to 4,000, excluding the overestimate of 7,000. This is a significant disparity. Therefore, we will report a median of 3,000 for the Dokshi ethnic population. However, according to the evidence presented in § 8, there are no speakers of the language.

5.3.3 Dyarim

Speakers of Dyarim reported their population to be an estimated 6,000. Gunn (1953), citing a native administrative census from 1949/1950, reported the population as 429. CAPRO (1995) estimated a population of 5,000. Blench (2005), estimated the population of Dyarim at 2000 speakers. Applying the population growth formula to these three estimates gives 2,870, based on Gunn, 9,932 based on CAPRO, and 2,894 based on Blench (2005). Obviously, the CAPRO estimate was probably too high. A visual inspection of the satellite photos reveals about 150 compounds. Estimating 20 people per compound, we get an estimate of 3,000 people. If the estimates based on Gunn and Blench are increased for population growth and rounded to the nearest 1,000, they also give an estimate of 3,000. Our observations of the villages agree that an estimate of 3,000 speakers of Dyarim is possibly close to accurate.

5.3.4 Tulai

It is difficult to estimate the size of the ethnic Tulai population because many of their villages are not centralized but rather separate compounds spread over a wide area. There are also speakers of other languages in the area. Furthermore, the larger Tulai villages along the Jos-Bauchi Road are mixed with many ethnic Hausa, Pesse, and Dass people. The people reported their population to be about 2,000. Based on our observations, 2,000 seems to be a reasonable estimate for the ethnic population. There are no speakers of the language.

5.3.5 Zeem

A figure of 1,500 was reported as the population of the ethnic group. Based on our observations, 1,500 seems to be a reasonable estimate for the ethnic population. There are no speakers of the language.

Table 2. Summary of population estimates

<table>
<thead>
<tr>
<th>Language name</th>
<th>Estimated ethnic population</th>
<th>Estimated speaker population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cha’ari</td>
<td>1,000</td>
<td>&lt;1000</td>
</tr>
<tr>
<td>Dokshi</td>
<td>3,000</td>
<td>0</td>
</tr>
<tr>
<td>Dyarim</td>
<td>3,000</td>
<td>3,000</td>
</tr>
<tr>
<td>Tulai</td>
<td>2,000</td>
<td>0</td>
</tr>
<tr>
<td>Zeem</td>
<td>1,500</td>
<td>0</td>
</tr>
</tbody>
</table>

5.4 Origins of the Zeem cluster groups

It is useful to collect stories of the history of people groups. It can give an indication of linguistic and cultural relationships with other groups. They may also give background to any positive or negative attitudes toward other groups.

The Cha’ari, Dokshi, and Dyarim share the tradition that before moving to their current locations they had lived with the Gyaazi (Geji) people on Zaranda Hill, which is 40 to 65 km (25–40 mi.) northeast of their current village locations. The Zeem told us that they had lived on Zayam (or Ziem) Hill located to their west. When they descended from the hill some of their people went to Zonkwa in Kaduna State and others to the Lafia area in Nasarawa State, while the rest of them settled in their
present location. They said that those in Kaduna have recently moved to the Zayam community in Toro in a bid to reunite with their ‘brothers.’ We were unable to confirm the existence of a Zeem community in Toro town. The Tulai said that they cannot recall their historical origins.

5.5 Other social descriptions

In this section, we give a brief description of social categories: occupations, education, literacy, religions, and intermarriage. These are relevant categories in a sociolinguistic study because they can be directly correlated to language-use patterns.

Traditional occupations such as farming tend to support the maintenance of a heritage language (Gal 1979). Mining, logging, and trading can hinder language maintenance by creating more contact with other language groups (Headland 2004). When marketing products or purchasing in marketplaces people need at least a limited proficiency in the languages of the other buyers and sellers. The primary occupation among the Cha’ari, Dokshi, Dyarim, Tulai, and Zeem is farming.

Intermarriage can influence language choices in several ways. A mother from another language group may teach her children both languages. A husband and wife may choose a third language, a language of wider communication, rather than the heritage language of either spouse. If intermarriage is infrequent, it will probably have little impact on language use in the community. But if intermarriage is a common practice, it can influence language-use choices throughout the community. If the spouse who marries into the language group learns the local language, it may be an indication of the vitality of that language. An unwillingness to marry from a certain language group may be an indication of negative attitudes toward that language. Cha’ari, Dokshi, Tulai, and Zeem reportedly marry from and into all neighboring language groups. The Dyarim people feel reluctant to marry the Fulani due to cultural and religious differences.

5.5.1 Education and Literacy

Education influences language-use choices of the next generation. The results of this influence may be incompatible with the language goals of parents and the community. Education is also a pathway to better socioeconomic opportunities, and parents may desire to prepare their children for school by using the school language in the home. There seems to be a correlation between the length of time formal education has been available and the decline in the use of heritage languages.

- Cha’ari: The Cha’ari people have had a primary school in Danshe since 1999. They do not have a secondary school. About 70 percent of Danshe children reportedly attend school but only 50 percent of the children in villages without schools receive formal education. There are a few Fulani children in their primary school.
- Dokshi: There have been primary schools in both villages since the mid-1970s. Only Lukshi has a secondary school. We were told that 90 percent of all Dokshi children attend school. Most children stay in school through Junior secondary school. About 30 percent of the children in the schools are Fulani or from neighboring language groups.
- Dyarim: Three of the Dyarim villages (Kayauri Dutse, Kayauri Sallake, and Kayauri Sallah) have had primary schools since the late 1990s. It was reported that 93 percent of their children attend school. There are some Fulani and Jarawa students also.
- Tulai: Seven out of nine Tulai villages have primary schools, the first was built in 1974. Two villages have junior secondary schools. In villages with schools, 65 percent of the children attend, but in villages without schools, only 17 percent attend. There are also Fulani, Dass, Pesse, Dokshi, and Hausa children in their schools.
- Zeem: Zayam primary school was built in the 1960s. Zayam Toroji primary school in Gin-gin was built in 2008. The secondary school is in Zayam. Over 90 percent of Zeem children are reported to attend school. There are also a few Fulani students in their schools.
In Tulai and Zeem, where the people reported that they have shifted to the use of Hausa (see § 8), the teachers reported that by 7 years of age children are considered proficient in Hausa. But in Dokshi, where they also speak Hausa as their first language, the teacher said that children are not proficient in Hausa until they are 10 or 11 years of age. The difference may only be in the teacher's perception of what it means to be proficient in a language. Most of the teachers agreed that it takes until 10 or 11 years of age for the children to become proficient in English.

Literacy is a requirement for survival in the modern world, regardless of how remote and isolated some people may live. Therefore, literacy and access to literature, including on the internet, can be a strong motivation for learning another language. Literature that is available in these language communities is written in either English or Hausa. The literature includes Bibles, novels, magazines, and textbooks used by primary and secondary school students. Muslims have copies of the Quran in Arabic.

5.5.2 Religions

Religions can either support or hinder language maintenance, depending on the policies of the institution. Traditional religions may support language maintenance since they would tend to hold on to traditional patterns. It was reported to us that the majority of the Cha’ari are Muslims (70%). About 20 percent of the population are Christians, and about 10 percent follow traditional African religious practices. The majority of the Dokshi are Muslims (70%). The remaining 30 percent of the population are Christians. About 40 percent of the Dyarim people are Christians, another 40 percent are Muslims, and 20 percent practice African religious traditions. The Tulai and Zeem people are reported to all be Muslims. (See summary in table 3.) The Christian church denominations found among the Cha’ari, Dokshi, and Dyarim are Evangelical Church Winning All (ECWA), the Apostolic Church, and the Redeemed Christian Church of God (RCCG).

<table>
<thead>
<tr>
<th>Language name</th>
<th>Muslims</th>
<th>Christians</th>
<th>Traditionalists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cha’ari</td>
<td>70%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Dokshi</td>
<td>70%</td>
<td>30%</td>
<td>--</td>
</tr>
<tr>
<td>Dyarim</td>
<td>40%</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>Tulai</td>
<td>100%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Zeem</td>
<td>100%</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

6 Influence from other languages

It is a widely accepted principle among sociolinguists that less-dominant languages are influenced by more dominant languages when they contact each other over an extended time. Sometimes it is a neighboring larger, more powerful, or more prestigious language, and sometimes it is a regional or international language of wider communication. Therefore, the impact of these more dominant languages needs to be considered when describing the environment of the less dominant language. The social relationships between these language communities are not necessarily adversarial. Motivations for acquiring a second language vary (Karan 2001; 2011; Karan and Stalder 2000) and often, speakers of the less prestigious languages are only interested in learning the more dominant languages for the pragmatic benefits of multilingualism. Smaller language groups may also feel less agency to influence their social environment, and multilingualism becomes a requirement. However, there are also some language communities that force their hegemony on the smaller groups around them to achieve greater social, political, economic, or religious power. In these cases, it is often advantageous to learn the more dominant language in order to survive.
6.1 Language contact

6.1.1 Cha’ari

The Cha’ari reported nearly weekly contact with the Bankal, Margi, Jere, Durr-Baraza-Dass, Tulai, Dyarim, and Zari. Other than the people with whom they intermarry, there are also some people who have migrated into the Cha’ari area. In the last year, a few Fulani have moved into the area, but this is a typical pattern that has been going on for generations. The people of Cha’ari reportedly have a good relationship with these immigrants. The immigrants participate in their various community activities, and we were told that some of them make attempts to learn to speak Cha’ari.

6.1.2 Dokshi

The Dokshi are virtually surrounded by the Dass dialects. They specifically mentioned the Durr-Baraza-Dass and Zumbul-Dass. They also have some contact with the neighboring Pesse language group. Other than the people with whom they intermarry, there are also some people who have migrated into the Dokshi area. An estimated 100 Fulani, Zakshi-Zari, and Laru people have moved into the Dokshi area in the last year. The mention of Laru is interesting because their homeland is very far away in Niger State.

6.1.3 Dyarim

The Dyarim reported contact with many different groups. This may be because they are so close to Toro town. They mentioned frequent contact with Jarawa, Fulani, Duguri, and Ribina-Jere people as neighboring language groups. Other than the people with whom they intermarry, there are also some people who have immigrated into the Dyarim area. They said that about ten to twenty people immigrate into their area every year. These immigrants are members of the Lemoro, Saya, Gusu-Jere, Gwandara, Ngas, and Jarawa language groups. Much of this immigration is migratory; the people may come for part of a year for farming or for a few years as merchants. They said that they have good relationships with all of them. These immigrants attend their churches, and their children attend the schools. Some also make attempts to learn the Dyarim language.

6.1.4 Tulai

The Tulai people reported frequent contact with Gusawa-Jere, Pesse, Zumbul-Dass, Cha’ari, and Jarawa language groups. Other than the people with whom they intermarry, there have been a few Fulani who have immigrated into the Tulai area. These people participate in their mosques and schools.

6.1.5 Zeem

The Zeem people reported frequent contact with the Bankal, Tulai, and Pesse neighboring language groups. Other than the people with whom they intermarry, there have been a few Fulani and Hausa who have immigrated into the Zeem area. This movement into their area has been a more recent phenomenon. These people participate in their mosques and schools.

---

14 Margi may refer to Central Marghi [mrt]. However, the speakers of Central Marghi live in Adamawa and Borno States, far to the east. The reference here is possibly to immigrants.
6.2 Multilingualism

Multilingualism\textsuperscript{15} is individualistic and a learned proficiency, and it is perceived differently. One person can say a few words in another language, and some may consider that bilingual. Others may not consider a person bilingual unless they can have a fluent conversation in another language. Due to the limited nature of this survey, we are not able to be precise about how proficient anyone is in another language. We did not test proficiency or in any other way confirm their reports. Our data is perceptual and limited; therefore, we are not able to draw any statistically sound conclusions. However, we can make some general impressionistic observations.

We are only looking at the perceptions of a few individuals as to the proficiency of people in their community in other languages. In the context of central Nigeria, we interpret perceptions of high and low proficiency as statements of their desired levels of proficiency for the pragmatic use of those languages in their social context. We believe that a statement of high proficiency means a person perceives that they can use the other language to meet their social needs. A statement of low proficiency means that the person cannot adequately use the language to meet their social needs. In the case of English, an assessment of low proficiency may be an aspiration for higher proficiency rather than a need. It would be prestigious to be able to have enough proficiency to have a conversation in English.

\textsuperscript{15} We use the term multilingualism to refer to any level of proficiency to speak more than one language. We use the term bilingualism to refer specifically to proficiency in two languages. A low level of proficiency may refer to no more than the ability to comprehend a limited set of words and speak a limited set of words and phrases. A high level of proficiency refers to the ability to speak and comprehend extended utterances on multiple topics.
The Cha’ari, Dokshi, Dyarim, Tulai, and Zeem are multilingual, but their levels of proficiency in different languages vary across generations and communities. During the group interview, participants were asked to give a general evaluation of language use and proficiency for different age categories of people in their community. The four general age categories are: elderly adults, middle-aged adults, young adults, and children. The age ranges are not precise; “children” refers to people up to about fifteen years, “young adults” refers to approximately 16 to 30 years, “middle-aged adults” refers to approximately 30 to 55 years, and “elderly adults” refers to approximately fifty-five years and older. We did not test proficiency or in any other way confirm their reports. Our data is perceptual and limited; therefore, we are not able to draw any statistically sound conclusions. However, we can make some general impressionistic observations. A summary is presented in table 4.

6.2.1 Cha’ari

The Cha’ari are multilingual in Cha’ari, Hausa, and English. All age groups are able to use Cha’ari, but the children have better proficiency in Hausa. Except for the children, all age groups reported to be proficient in Hausa as their second language. Only children and young adults have proficiency in English and their skills are limited.

The respondents stated that they have some understanding of these neighboring languages, but regardless, they use Hausa when they come in contact with these groups. Their reported understanding may not be substantial enough since these languages were not highlighted as languages in which they are multilingual.

6.2.2 Dokshi

Among the Dokshi people, only the elderly people retain any proficiency in their heritage language. Hausa is the dominant language used by all age groups. Middle-aged adults, young adults, and children have limited proficiency in English. It was emphasized that the proficiency in English among the elderly is low and among a very few. It was reported that some of the elderly people understand Durr-Baraza-Dass, but they only use Hausa when they meet.

6.2.3 Dyarim

All age groups are able to use Dyarim and Hausa. However, only the elderly, and children in Kayauri Dutse, have better proficiency in Dyarim than Hausa. In Kayauri Sallah, only the elderly people were reported to have good proficiency in Dyarim; all other age groups are limited in their ability to use Dyarim. Young and middle-aged adults were reported to have limited proficiency in English, children and the elderly do not have any proficiency in English.

In Kayauri Dutse, it was reported that young and middle-aged adults have limited proficiency in Fulfulde. In Kayauri Sallah, it was the middle-aged and elderly adults who were reported to have limited proficiency in Fulfulde. However, they further stated that despite their attempts in speaking the language of their neighbors, the Fulani often respond with Hausa instead of Fulfulde.

In Kayauri Dutse, we were told that the elderly have good proficiency in Jarawa and some of the middle-aged adults have limited proficiency. They explained that their village is closer to Jarawa villages, so they have more contact. However, their understanding of these languages is somewhat questionable since they do not usually use them when they come in contact with these groups; they generally use Hausa instead.

6.2.4 Tulai

Among the Tulai, only some elderly people retain any knowledge of their heritage language. All age groups have shifted to the dominant use of Hausa. Those present during the group discussion,
specifically stated that very few of the elderly and middle-aged adults have any understanding of English. Furthermore, the children and young adults have only limited proficiency in English.

6.2.5 Zeem

None of the Zeem retain any knowledge of their heritage language. In fact, we could not find anyone who was able to help elicit a wordlist. Furthermore, the children and elderly are monolingual in Hausa. It was reported that young and middle-aged adults predominantly use Hausa, and they have limited proficiency in English.

Table 4. Oral language use and proficiencies

<table>
<thead>
<tr>
<th>Village (language)</th>
<th>Children</th>
<th>Young adults</th>
<th>Middle-aged adults</th>
<th>Elderly adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danshe (Cha’ari)</td>
<td>Hausa, (Cha’ari), (English)</td>
<td>Cha’ari, Hausa, (Cha’ari), (English)</td>
<td>Cha’ari, Hausa</td>
<td>Cha’ari, Hausa</td>
</tr>
<tr>
<td>Lukshi (Dokshi)</td>
<td>Hausa, (English)</td>
<td>Hausa, (English)</td>
<td>Hausa, (English)</td>
<td>Hausa, (Dokshi), (Durr-Baraza-Dass), (English)</td>
</tr>
<tr>
<td>Kayauri Dutse (Dyarim)</td>
<td>Dyarim, Hausa</td>
<td>Hausa, Dyarim, (English), (Fulfulde)</td>
<td>Hausa, Dyarim, (Jarawa), (English), (Fulfulde)</td>
<td>Dyarim, Hausa, (Jarawa), (Fulfulde)</td>
</tr>
<tr>
<td>Kayauri Sallah (Dyarim)</td>
<td>Hausa, (Dyarim)</td>
<td>Hausa, (Dyarim), (Fulfulde), (English)</td>
<td>Dyarim, Hausa, (Fulfulde)</td>
<td></td>
</tr>
<tr>
<td>Tulai (Tulai)</td>
<td>Hausa, (English)</td>
<td>Hausa, (English)</td>
<td>Hausa, (English)</td>
<td>Hausa, (Tulai), (English)</td>
</tr>
<tr>
<td>Zayam (Zeem)</td>
<td>Hausa</td>
<td>Hausa, (English)</td>
<td>Hausa, (English)</td>
<td>Hausa</td>
</tr>
</tbody>
</table>

NOTE: Languages are arranged from highest proficiency to least. Languages in parenthesis indicated limited proficiency by only some people.

7 Language vitality

The presence of other languages and the frequency of encountering other languages outside of the home may influence the vitality of heritage languages. In response to this potential impact Lewis and Simons (2017:154) describe five conditions that are critical for the sustainability of a language, which is often referred to as language maintenance. These five conditions are organized by the acronym FAMED: function, acquisition, motivation, environment, and differentiation.

a. Function: For the sustainable use of a language the community must be able to employ the language for specific functions. As the number of functions for a language decreases, so does its vitality.

b. Acquisition: A community must have a way to acquire proficiency in a language in order to maintain the use of that language. The home represents a common domain for the acquisition of languages.

c. Motivation: For sustainability, the community must be motivated to use their heritage language and perceive some benefit in its use.

d. Environment: The environment refers to whether the government provides a route for a language to flourish, or if it hinders the use of a language. It focuses primarily on government policy, particularly that which is funded and enforced.

e. Differentiation: Differentiation describes a situation in which different languages are used in different domains. In multilingual communities, there needs to be a culturally perceived
differentiation of which language is used for which purposes. This serves to protect a minority language from being overwhelmed by a more prestigious language.

Language endangerment contrasts with language sustainability or maintenance. When any of the above conditions are not sufficiently met, a language is in the process of shifting or becoming endangered. A language loses vitality when:

a. it loses usefulness in the daily functions for which people need language;

b. children are not provided with opportunities to learn their heritage language;

c. the community sees no benefit to the use of the heritage language;

d. the government provides no institutional support for the maintenance of the language;

e. the community does not value the use of the language in some protected domains.

In multilingual communities, we speak of a repertoire of languages that are available for different purposes. In this section, we describe these conditions and end with an assessment of the vitality of each Zeem cluster language.

7.1 Functions of languages in the repertoire of the Zeem cluster languages

Language use and language choices vary across domains, or for different functions. Some languages might be restricted to a limited number of domains but used heavily in such domains. For example, English may be the dominant language used in the schools, but it is used little outside of the schools. Furthermore, the dominant use of one language in a given domain does not mean that only that one language is used in that domain; other languages may be used less frequently. It is also true that domains determine language use to some extent. For example, there are speakers of different languages who attend the same church; therefore, a language of wider communication must be used. Likewise, a language such as Cha’ari will not be used by the Cha’ari with anyone who does not speak Cha’ari. If someone gains any proficiency in any of the neighboring lesser-known languages, it is only for the pragmatic purpose of being able to converse with speakers of those languages. However, we also see with some of these languages, which are closely related, that they can be understood by speakers of the related languages.

Some language functions are more essential than others when discussing language vitality. Of importance to note is which languages are used when parents speak to children, among children at play, and between husbands and wives, and what is perceived as the most widely used language in the community.

We sometimes find a pattern across the whole cluster, for example, in the case of literacy. For all language groups, the elderly people are the least literate. The prevalent use of literacy materials is among young adults and children. Most middle-aged adults have some literacy skills. Some read and write occasionally, others do it more frequently. We were told that most people text in Hausa but some use English.

7.1.1 Cha’ari

Cha’ari, Hausa, and English are the three languages used in the repertoire of the Cha’ari people. Cha’ari is the predominant language of the home, but Hausa is also used. Both Cha’ari and Hausa are used for most functions in their communities. It was reported, and we observed, that young people use Cha’ari. However, we were told that the people in Danshen-Lukshi no longer speak Cha’ari. When we were briefly in Danshen-Lukshi, we observed only Hausa being used. The teachers in the Danshe primary school most frequently use English to teach and their textbooks are in English. Children are allowed to use their heritage language on the playground but not in the classroom. Most church activities are done in Hausa. However, we were also told that Hausa and English are used interchangeably for Bible reading, singing, prayers, and youth services. At the close of a church activity, the young adults explain the sermon in Cha’ari to the elderly who may not have understood it well enough.
Hausa is used in health clinics and markets. Hausa and Cha’ari are used during festivities. Hausa and Arabic are the predominant languages used in the mosque for Islamic services. The Imam interviewed mentioned some instances when Cha’ari is used, such as among its speakers when exchanging pleasantries, within the mosque. Cha’ari may also be used for Islamic discussions in the mosque if there are no speakers of other languages present. This helps for a better understanding of what had been taught. Cha’ari, Hausa, or Arabic may be used for weddings and coronation ceremonies conducted at the mosque.

Contrary to our findings, Blench indicates that there are few to no Cha’ari speakers (Blench 2020a:105). In his *Atlas of Nigerian Languages*, he cites Caron (2005) as reporting “‘a few hundred’ speakers.” In Blench’s (2020b:7) report, based on personal recent research, he indicates that Cha’ari is no longer spoken. However, he does not list Cha’ari among extinct languages.

### 7.1.2 Dyarim

Dyarim, Hausa, and English are the three languages used in the repertoire of the Dyarim people. However, the people use Dyarim and Hausa in different proportions in different villages. In Kayauri Dutse, it was reported that Dyarim is the language most frequently used in the home and among Dyarim people. However, Hausa is used sometimes in these domains. However, in Kayauri Sallah, they reported the dominant use of Hausa in these same domains. The elderly are reported to be the best speakers of Dyarim. Despite the active use of Dyarim among the younger generations, they are considered less proficient, particularly those in Kayauri Sallah, who have better control of Hausa.

Blench (2005:2) reported less use of Dyarim. In fact, he estimates that there may only be 100 speakers out of a tribal group of 2,000. He said that none of the young people present at his meeting could speak the language, the chief was not fluent, and that Dyarim is not spoken at all in some homes. While it would be nice to think that the outlook has improved for the future of Dyarim, the discrepancy between our experiences is probably due to encountering different collections of people. However, there is also the implication that the shift to Hausa has not significantly increased.

The prescribed languages of instruction in the schools are English and Hausa. The teachers in the Kayauri Dutse primary school primarily use English to teach and their textbooks are in English. Children reportedly use Hausa and Dyarim on school playgrounds, and teachers allow the use of Dyarim in school. The teacher interviewed reported the use of Dyarim and Hausa for answering academic questions outside school. It is worth noting that this may not be the case for all teachers in the school because only one out of five teachers in this school are native speakers of Dyarim.

Both Hausa and English are used for most activities in the churches. The pastor, who is not a Dyarim speaker, stated that he encourages the interpretation of the sermon in Dyarim, especially for the elderly who may not have understood the sermon well in Hausa. Dyarim is also used for prayers, hymns/songs, announcements, and women’s fellowship.

In the mosque, Arabic and Hausa are used. Arabic is used for Quran recitation, prayers, and Jumat services. Dyarim is not used for any activity within the mosque. It is however used sometimes with Hausa and Arabic for Islam-related activities outside the mosque.

Hausa is used in the health clinic and markets. Dyarim is used more dominantly than Hausa in-group gatherings such as cultural festivals.

### 7.2 Means of acquiring languages in the repertoire of the Zeem cluster languages

For Cha’ari and Dyarim speakers, the home serves as the main domain where their heritage languages are learned. Contact with other native speakers outside the home provides opportunities to exercise their language skills. The dormant use of Dokshi and Tulai makes it impossible for children to learn their heritage languages. With the extinction of Zeem, all age groups are left with the use of Hausa, and in some cases, English.

It also appears that the home is where children begin to learn Hausa as well, particularly for the Dokshi, Tulai, and Zeem where it is the only language used in the home. The use of Hausa is also
supported by contact with Hausa speakers outside of the home, in the churches and mosques, and some in the schools.

The Dokshi and Dyarim, who reportedly understand neighboring languages, such as Jarawa, Fulfulde, and Durr-Baraza-Dass, probably gained this proficiency as a result of frequent contact with speakers of these languages.

Those who attain several years of education are able to speak English. Their proficiency is exercised when they come in contact with other intellectuals who understand and speak English fluently. They are able to learn Hausa as a language of wider communication when they come in contact with other speakers of Hausa. They are able to exercise their proficiency when they come in contact with neighboring and immigrant groups who may not understand their native language.

We did not gather information on Arabic instruction. It is typical for mosques to offer classes to learn to read and recite surahs from the Quran. But the only use of the language is for religious purposes.

7.3 Motivation for using languages in the repertoire of the Zeem cluster languages

As described in § 7.1, three of these languages (Dokshi, Tulai, and Zeem) have lost most, and in some cases, all of their speakers. The loss of their language leaves them with no option but to use Hausa. Despite the state of their language, they seem to have good attitudes toward their ethnic identity, which may also include their inactive language. Islamic leaders interviewed in Dokshi, Tulai, and Zeem, discouraged the idea of any literacy development in their language. They perceive it as being an impossible and fruitless task since the people lack any understanding of their heritage languages and have completely adopted the use of Hausa.

The Cha’ari and Dyarim people seem to have a good attitude toward their language. As evidence of their good attitudes, they spoke with pride about their expectation that their languages will be spoken for generations to come. Another indication of their positive attitude is their desire for documenting their languages to aid in their development.

For these language groups, the motivation to speak Hausa comes from its function as a language of wider communication. Having contact with other language groups that do not understand their heritage language leaves them to the use of Hausa. Locally, Hausa is a prestigious language, which may be another motivating factor.

While there has been a motivation in the past to learn Jarawa, Durr-Baraza-Dass, and Fulfulde, it appears that the younger generations are satisfied to use Hausa with these neighboring groups, as they do with all other neighboring groups.

The motivation to learn Arabic comes from the religious affiliation of those who are Muslims. The motivation to speak English is largely attributed to its function in the pursuit of education. However, for Christians, access to the English Bible may be another motivation for learning the language. The prestige of English as a global lingua franca may be another motivating factor.

7.4 Environmental support for the maintenance of minority languages

While the Zeem cluster languages do not currently receive any institutional support, the Nigerian government’s language policy encourages the oral use of any language in the country and does not hinder any private development of the language (Federal Ministry of Education 1981). Furthermore, the revised policy on the use of minority languages in education states that “every child shall be taught in their own mother tongue or in the language of the immediate community for the first four years of basic education.” (Federal Republic of Nigeria 2013:section 1, subsection 8.g.) However, there has been little progress in implementing these policies. The absence of government support means a lack of important institutional support for language maintenance. Adegbija (2007) presents a lengthy discussion on the language policies of the Nigerian government and presents evidence that there is a greater focus on the development of the major indigenous languages (Yoruba, Hausa, and Igbo) and English than concern for the smaller, less prestigious minority languages. We have no evidence that this lack of institutional support is a major factor affecting the language vitality of Cha’ari or Dyarim, or if it contributed to the
loss of Dokshi, Tulai, or Zeem. However, if these heritage languages were socially appreciated and given institutional support, that could possibly result in language maintenance.

7.5 Differentiation of languages in the repertoire of the Zeem cluster languages

With such a brief time of observation, it was not possible to investigate differentiation in different domains effectively. For Dokshi, Tulai, and Zeem, there is little differentiation in their communities since Hausa is the dominant language for virtually all functions.

In all these communities, English has a role in the schools and some aspects of the church. For Muslims, Arabic has a role in religious functions.

For most of the Cha’ari and Dyarim, their heritage languages still have important roles as the language of the home and for personal relationships within their communities. However, even the occasional use of Hausa in their home and personal functions is evidence that there is not a clear differentiation of languages and functions. More study is needed to determine differentiation between domains.

7.6 EGIDS assessments for Zeem cluster languages

The Expanded Graded Intergenerational Disruption Scale (EGIDS) (Lewis and Simons 2017) provides a rubric for assessing the potential for sustainability of a language. The EGIDS considers the state of intergenerational support for language maintenance, as well as institutional support, and the stage of literary development for the language. The scale runs from 0 to 10 with 0 representing languages that are used for international commerce and political policy and 10 representing extinct languages that have no identificational value for any community.

Considering the indicators of vitality described in § 7.1 to § 7.5, we can make the following assessments of vitality for each of the languages in this study. The level definitions quoted come from the Ethnologue (Eberhard et al. 2021b). A summary is presented in table 5.

7.6.1 Cha’ari

The Cha’ari language use is best described as level 6b – “threatened” on the EGIDS. This means “the language is used for face-to-face communication within all generations, but it is losing users.” Even with the use of the language being observed by all generations, Hausa is still very much used among themselves, especially children. Furthermore, it appears that the people of Danshen-Lukshi no longer use the language.

The sustainability of Cha’ari in the future is not certain. If people shift to using Hausa for more functions, parents may start using Hausa more with their children. Over time, the children will become less proficient in their heritage language than Hausa, which then leads people who stop using the heritage language for any purpose. This is what has happened with the Dokshi, Tulai, and Zeem. Furthermore, the small size of the population, lack of concern about language maintenance, and the limited use of Cha’ari in churches, schools, and marketplaces could eventually reduce the potential for the long-term sustainability of the language.

7.6.2 Dokshi

The Dokshi language use is best described as level 9 – “dormant” on the EGIDS. This level defines a language that “serves as a reminder of heritage identity for an ethnic community, but no one has more than symbolic proficiency.” There is no active use of the language among the people. We were only able to find one elderly man who could provide words in the language and then with some difficulty. Despite their inability to speak the language, they identify themselves as an ethnic group who have shifted to the use of a language of wider communication.
7.6.3 Dyarim

The Dyarim language use is best described as level 6a – “vigorous” on the EGIDS. This level defines a language that “is used for face-to-face communication by all generations and the situation is sustainable.” This situation is particularly true for those in Kayauri Dutse. The use of Dyarim for face-to-face interactions was observed and also reported across all generations. Those in Kayaurin Sallah do not seem to have as many functions where the language is used like those of Kayauri Dutse, but still, the children are learning the language. Based on Blench’s (2005:2) experience, the EGIDS level may be 6b – “threatened.” He found that the people are shifting to Hausa, and none of the young people he met could speak the language. But he acknowledged that there may be some isolated communities where there is greater vitality.

The sustainability of the language in the future is not certain. If people shift to using Hausa for more functions, parents may start using Hausa more with their children. Over time, children will become less proficient in their heritage language than Hausa, which then leads to people who stop using the heritage language for any purpose. Furthermore, the small size of the population, lack of concern about language maintenance, and the limited use of Dyarim in churches, schools, and marketplaces could eventually reduce the potential for the long-term sustainability of the language.

7.6.4 Tulai

The Tulai language use is best described as level 9 – “dormant” on the EGIDS. This level defines a language that “serves as a reminder of heritage identity for an ethnic community, but no one has more than symbolic proficiency.” There is no active use of the language among the people. The use of Hausa has been adopted by all generations. Only three members of the elderly generation could provide words in the language and then with some difficulty. Despite their inability to speak the language, they identify themselves as an ethnic group who have shifted to the use of a language of wider communication.

7.6.5 Zeem

The Zeem language use is best described as level 9 – “dormant” on the EGIDS. This level defines a language that “serves as a reminder of heritage identity for an ethnic community, but no one has more than symbolic proficiency.” There is no active use of the language among the people. The use of Hausa has been adopted by all generations. However, they still maintain their identity as people of Zeem but without the use of their native language.

### Table 5. EGIDS assessments

<table>
<thead>
<tr>
<th>Language name</th>
<th>EGIDS level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cha’ari</td>
<td>6b</td>
</tr>
<tr>
<td>Dokshi</td>
<td>9</td>
</tr>
<tr>
<td>Dyarim</td>
<td>6a</td>
</tr>
<tr>
<td>Tulai</td>
<td>9</td>
</tr>
<tr>
<td>Zeem</td>
<td>9</td>
</tr>
</tbody>
</table>

8 Linguistic relationships

As discussed at the beginning of § 2, one purpose of this research is to gather data that will help make decisions about language planning and development. One environmental factor for language development is the amount of linguistic variation in the spoken varieties. Much of this survey is based on the reported perceptions of members of the speech community. Often people will make vague comments describing the similarities of different varieties. Likewise, linguists will often give similarly vague
statements that one variety is “close” to another. Even linguistic classifications do not give a definitive description as to whether related varieties are linguistically near or distant.

We are interested in the level of comprehension between varieties. Comprehension, along with lexical and phonological similarity, is important for establishing whether the speakers of two varieties can use the same literature. While it would be ideal to conduct comprehension tests, such tools are quite involved and beyond the scope of this initial needs-assessment survey. Instead, we used the data we gathered to make inferences on the potential for comprehension.

In this section, we will discuss the linguistic classification that has been proposed. We also present the phonetic inventory comparisons, quantitative findings of a lexical comparison, and descriptive comparisons of phonological similarity and variation. This information is presented to provide a comparison to what people reported about whether their language is close to or different from other languages. We also offer the data we have collected in the hope that it will help improve the accuracy of linguistic classification systems.

8.1 Classification

Eberhard et al. (2021a) have classified these languages in the Zeem cluster as Afro-Asiatic, Chadic, West, B, B.3, Zaar proper. Blench (2020a:105) classified the language as Chadic, West Branch B, Zaar group. According to Blench (2020a:114), the Zaar group has three sub-groups: the Barawa, Guruntum, and Boghom varieties. The Barawa group is divided into six different clusters: the Geji cluster, Polci cluster, Zeem cluster, Dass cluster, Zari cluster, and the Guus-Zaar cluster. Blench places Cha’ari, Dokshi, Dyarim, and Zeem in the Zeem cluster. However, he (2020a:21, 114) also places Dokshi in a Dass cluster. In a paper on Dyarim, Blench (2005:14) debates whether Dyarim should be classified with Sigidi (Guus) Saya, in the Guus-Zaar cluster, due to divergence from Cha’ari and greater similarity with Sigidi. However, in his Atlas of Nigeria Languages (2020a) he continues to place Dyarim in the Zeem cluster. Hammarström et al. (2022) place Dyarim in the Zakse-Saya group, which appears to be a combination of Blench’s (2020a) Zari and Guus-Zaar clusters.

8.2 Reported comprehension

While the Cha’ari reported limited comprehension of some of their neighboring languages, they were not specific as to which languages. Furthermore, the comprehension is low enough that they resort to Hausa for conversation with these neighboring groups. In Lukshi, the people said that some people understand Durr-Baraza-Dass, which is related if Blench (2020a:21, 114) is correct in classifying Dokshi in the Dass cluster. None of the other groups reported any comprehension of other Zeem cluster languages. Blench (2005:15) relates that Cha’ari is the closest language to Dyarim.

8.3 Phonetic inventory

In this section, we provide some initial, cursory observations on the phonology of the Zeem cluster languages. The reader will find other features in the transcribed wordlist that have not been discussed. (See the wordlists in Appendices F and G.) This analysis is based on a small data set and has not been thoroughly studied. Therefore, these findings are tentative. The consonants found in the Zeem cluster languages are presented in table 6 and the vowels in table 7.

---

16 It appears that Blench (2020a) has forgotten to include Tulai in his grouping of Zeem cluster languages on page 114. However, on page 105 he has included Tulai in the “Zeem-Caari-Danshe-Dyarim cluster.” However, Dokshi is excluded from this list and marked with a question mark. On page 21, Dokshi is included as part of the Dass cluster.
Table 6. Zeem cluster consonant inventory

<table>
<thead>
<tr>
<th>Plosive</th>
<th>Bilabial</th>
<th>Labio- dental</th>
<th>Alveolar</th>
<th>Alveo-palatal</th>
<th>Velar</th>
<th>Labial velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implosive</td>
<td>ð</td>
<td>ð</td>
<td>ð</td>
<td>ð</td>
<td>ð</td>
<td>ð</td>
<td>ð</td>
</tr>
<tr>
<td>Nasal</td>
<td>m</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Rhotic</td>
<td>r/ r</td>
<td>r</td>
<td>r</td>
<td>r</td>
<td>r</td>
<td>r</td>
<td>r</td>
</tr>
<tr>
<td>Fricative</td>
<td>(ɸ)</td>
<td>(f v)</td>
<td>s</td>
<td>z</td>
<td>Ꟈ</td>
<td>Ꟈ</td>
<td>Ꟈ</td>
</tr>
<tr>
<td>Affricate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ꟊ</td>
<td>Ꟊ</td>
<td>Ꟊ</td>
</tr>
<tr>
<td>Lateral</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ꟊ</td>
<td>Ꟊ</td>
<td>Ꟊ</td>
</tr>
<tr>
<td>Fricative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ꟊ</td>
<td>Ꟊ</td>
<td>Ꟊ</td>
</tr>
<tr>
<td>Approximant</td>
<td></td>
<td>l</td>
<td>j</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Phones in parenthesis ( ) do not occur in all wordlists.

There is much similarity in the individual inventories but there is also some variation in the distribution of phones from each location. For example, there are twice as many occurrences of [t] and [d] in the Dyarim wordlists as found in the Cha’ari and Dokshi wordlists. However, the Dyarim wordlist has less than half the number of occurrences of [ɡ] as found in the Cha’ari and Dokshi wordlists. The Dokshi wordlist has half the number of occurrences of [l] and [ɲ] as found in the Cha’ari and Dyarim wordlists. Regarding the phones that are not found in every wordlist, the absence of [v] and the presence of [h] in the Dokshi wordlist is the only enlightening point, which will be discussed in § 8.5. There are no occurrences of [ʃ] in the Tulai wordlist, possibly since we collected a much shorter list there.

Blench (2005:3) presents an inventory of the Dyarim consonants. He does not include the affricates in his inventory, but there are examples of affricates in his wordlist. There are three items in our wordlist that have [ʤ]; for two of them (farm, water), Blench has [ʒ], which is also not in his inventory. Again, Blench does not include the palatal nasal [ɲ] in his inventory but there are examples in his wordlist. Blench includes the dental fricative [θ] but says it is rare; we did not have any occurrences. We had one occurrence of the bilabial fricative [ɸ] in our Dokshi wordlist and two occurrences in our Tulai wordlist. Blench includes the voiced lateral fricative [ɮ] in his inventory, but there is only one occurrence in his wordlist. However, on page 14, he gives examples of the lateral approximant [l] in correspondence with the voiced alveolar fricative [ɮ] in corresponding Guus words. Item #158 ‘between’ in our Cha’ari wordlist is transcribed as [ɬʃ̃ám], which probably represents the same sound.

Blench (2005:5) discussed the unusual occurrence of labialization in Dyarim, a Chadic language. He says it is more typical of some neighboring Benue-Congo, Plateau languages, such as Berom. In some cases, labialization marks plurals on some nouns but singular on others. Most of the words in our Dyarim wordlist with labialization are verbs. In the Cha’ari and Dokshi wordlists, labialization is found in a mixture of nouns, adjectives, and verbs. Palatalization is also found in all our wordlists, except Tulai. It does not appear to have any morphological function. Without further analysis, we are not certain whether palatalization is phonemic or if it represents coarticulation of consonants with approximants.

The inventory of Zeem cluster vowels in our transcriptions is found in table 7.

Table 7. Zeem cluster vowel inventory

<table>
<thead>
<tr>
<th></th>
<th>Non-lengthened</th>
<th>Lengthened vowels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Front Central Back round</td>
<td>Front Central Back round</td>
</tr>
<tr>
<td>Close</td>
<td>i i u</td>
<td>i: (i:) (u:)</td>
</tr>
<tr>
<td>Close-mid</td>
<td>e ə o</td>
<td>(e:) o:</td>
</tr>
<tr>
<td>Open-mid</td>
<td>ĕ a</td>
<td>(ĕ:) (a:)</td>
</tr>
<tr>
<td>Open</td>
<td>a</td>
<td>a:</td>
</tr>
</tbody>
</table>

NOTE: Phones in parenthesis ( ) do not occur in all wordlists.
Blench (2005:3) proposes that Dyarim “probably” has a seven-phone vowel system with lengthened forms for all vowels. We have nine phonetic vowels in our transcriptions. The one difference between our inventory and Blench’s is that he does not have the close central vowel [ɨ]. Conversely, we have very few occurrences of the schwa [ə], so these are probably the same vowel. We have examples of lengthened forms for all the vowels except the schwa [ə]. However, the only lengthened vowels that are found in all four wordlists are [aː, iː, oː]. There was only one occurrence of [ɔː] and four occurrences of [iː] and these were all in the Cha’ari wordlist. The largest number of lengthened vowels (105) were recorded in the Cha’ari wordlist, and the least were in the Dokshi list (12). We would have expected Tulai to have the least number of lengthened vowels because the wordlist is so much shorter than the others.

We have occurrences of sequential, non-geminate vowels in our wordlists. These may be diphthongs because the second vowel sound is virtually always [i] or [u]. The only combinations found in all four wordlists are [ei] and [au]. The Cha’ari and Dokshi wordlist also have [au] and [ou]. The Cha’ari and Dyarim wordlists have [ai] and [ei]. There are a few other combinations, but they occur very few times. Blench (2005) only has sequential geminate vowels in his Dyarim wordlist, which are appropriately analyzed as lengthened vowels.

8.4 Lexical similarity within the Zeem cluster

The Zeem cluster wordlists were compared to estimate a percentage of lexical similarity. (See § 4.5 for a description of the comparison method. See table 7 for the results of the calculations.) Of the 222 items in the wordlist, only eighty-nine words were collected in Tulai. Since the Tulai wordlist is so short the percentage of similarity might be higher than a comparison with a longer list. In the process of preparing the wordlists for comparison, some items were excluded. They were either not elicited or they appeared to be making the same comparison as another item. In table 8, (n) is the number of words that were compared. These are very rough comparisons, and rigorous comparative methods were not used to establish cognates. However, they provide a quantified similarity to compare with the reported similarity.

<table>
<thead>
<tr>
<th>Table 8. Lexical similarity within the Zeem cluster languages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cha’ari</td>
</tr>
<tr>
<td>66–80% n = 89</td>
</tr>
<tr>
<td>30–46% n = 210</td>
</tr>
</tbody>
</table>

This comparison shows that the greatest similarity (66–80%) is between Cha’ari and Tulai. The least similarity (30–46%) is between Cha’ari and Dyarim. Furthermore, Dokshi groups more closely with Cha’ari and Tulai than with Dyarim.

Shimizu (1978) only published seven words from Zeem, Tulai, Cha’ari, and Dokshi. Five of those Zeem words appear to be cognate with the words in our wordlists. One of the words appears to be like the word we collected in Cha’ari. The seventh word is not on our wordlist. This gives only the slightest implication that Zeem was most similar with Cha’ari, and there would probably be no problem with classifying it with Cha’ari and Tulai.

17 See the note at the beginning of Appendix E describing choices that were made in deciding which words to count and which to exclude.
8.5 Phonological variation between Zeem cluster languages

From historical linguistics, we learn that languages change as a phonological innovation diffuses outward to other varieties or as one variety has contact with another language and borrows a feature. These innovations tend to be slight changes from one phone to another phone that is similar. When we see several words that have a pattern of change like this, it may be an indication of the way that the varieties are diverging. It may also be an indication of the differences that people hear when they recognize another dialect of their language. As languages diverge, there are more changes like this, and the speakers may have more difficulty understanding the other variety. We look at these patterns of phonological change to better understand the kinds of changes that are making the varieties different.

In the first set of examples in table 9, we see that there is a consistency in the correspondence between word-final [i/ɨ] in the Cha’ari words and [ɛ] in the Dyarim words. There are examples of both variations in the Dokshi wordlist. There were no comparative words collected in Tulai.

Table 9. Correspondence in final vowel [i/ɨ] ~ [ɛ]

<table>
<thead>
<tr>
<th>#</th>
<th>Gloss</th>
<th>Cha’ari</th>
<th>Dokshi</th>
<th>Dyarim</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>bird</td>
<td>jáːfi</td>
<td>jəfi</td>
<td>rjáːfɛ</td>
</tr>
<tr>
<td>173</td>
<td>die</td>
<td>mîstɛ</td>
<td>mîstɛ</td>
<td>mástɛ</td>
</tr>
<tr>
<td>185</td>
<td>give</td>
<td>bərtɛ</td>
<td>bártɛ</td>
<td>bértɛ</td>
</tr>
<tr>
<td>222</td>
<td>cry</td>
<td>kûlf</td>
<td>pîkûlî</td>
<td>kûlɛ</td>
</tr>
</tbody>
</table>

Similar to the correspondence shown in table 9, in table 10, we have the same correspondence between word-final [i/i] in the Cha’ari words and [ɛ] in the Dyarim words, but in these examples, the Dokshi words have lost the final vowel. With these words, we have comparative examples in the Tulai wordlist, and they follow the pattern with Cha’ari having word-final [i]. Blench (2005) discusses the use of suffixes that mark plurality on nouns, these include a final /-i/. However, these nouns in the Cha’ari and Tulai wordlists have the [-i/i] on singular forms. We are uncertain if the presence of the [-i/i] may be a remnant of a non-productive morpheme.

Table 10. Correspondence in final vowel [i] ~ ø ~ [ɛ]

<table>
<thead>
<tr>
<th>#</th>
<th>Gloss</th>
<th>Cha’ari</th>
<th>Dokshi</th>
<th>Dyarim</th>
<th>Tulai</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>blood</td>
<td>vûrûːnî</td>
<td>bûrûŋ</td>
<td>bûrûːnî</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>fire</td>
<td>wûtî</td>
<td>wûtɛ́</td>
<td>wûtî</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>stone</td>
<td>pûːʃ</td>
<td>pûs</td>
<td>pûːs</td>
<td>pûːʃí</td>
</tr>
<tr>
<td>91</td>
<td>stranger</td>
<td>sîmbîːrî</td>
<td>sîmbîr</td>
<td>sîmbîːr</td>
<td></td>
</tr>
<tr>
<td>166</td>
<td>blow</td>
<td>fûːtî</td>
<td>fûwàt</td>
<td>fûːtɛ</td>
<td>--</td>
</tr>
<tr>
<td>181</td>
<td>fight</td>
<td>tûːmî</td>
<td>tûn</td>
<td>lûŋ’ŋɛ</td>
<td>--</td>
</tr>
</tbody>
</table>

In table 11, we see examples of another correspondence with word-final vowels. In these examples, the Tulai words have a final schwa [ə] that does not occur in comparative words from the other locations. Once again, there is an exception for Dokshi which has word-final schwa [ə] on item #55 ‘farm.’ Blench (2005) talks extensively about the use of suffixes that mark plurality on nouns, these include a final /-s(ə)/ and /-tə/. However, these nouns in the Tulai wordlists have the [-ə] on singular forms. We are uncertain if the presence of the schwa [ə] may be a remnant of a non-productive morpheme.
Table 11. Correspondence in final vowel ø ~ [ə]

<table>
<thead>
<tr>
<th>#</th>
<th>Gloss</th>
<th>Cha’ari</th>
<th>Dokshi</th>
<th>Dyarim</th>
<th>Tulai</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>leg</td>
<td>násǐŋ</td>
<td>ngásǐŋ</td>
<td>násǐŋ</td>
<td>nēsǐŋ</td>
</tr>
<tr>
<td>32</td>
<td>nose</td>
<td>nǐsǐŋ</td>
<td>ngasǐŋ</td>
<td>ìsǐŋ</td>
<td>nǐtsǐŋ</td>
</tr>
<tr>
<td>47</td>
<td>yam</td>
<td>gǔlǐn</td>
<td>gǔlǔn</td>
<td>gǔlǐŋ</td>
<td>gǔzǐŋ</td>
</tr>
<tr>
<td>55</td>
<td>farm</td>
<td>vweł</td>
<td>hùl’lə</td>
<td>--</td>
<td>vùl’lə</td>
</tr>
<tr>
<td>64</td>
<td>rain</td>
<td>vⁿ`àn</td>
<td>fⁿ`àn</td>
<td>vⁿ`àn</td>
<td>vwen`ə</td>
</tr>
</tbody>
</table>

In table 12, we show some other examples that may be related to the /-tə/ suffix discussed by Blench (2005). In these examples, words in Dokshi and Dyarim have a final /-tV/ that does not occur in the Cha’ari words. It is noteworthy that these are all verbs and this /-tV/ may be a verbal suffix. Again, we are uncertain if the presence of this word-final /-tV/ may be a remnant of a non-productive morpheme. No verbs were collected in Tulai.

Table 12. Variation in final /-tV/

<table>
<thead>
<tr>
<th>#</th>
<th>Gloss</th>
<th>Cha’ari</th>
<th>Dokshi</th>
<th>Dyarim</th>
</tr>
</thead>
<tbody>
<tr>
<td>175</td>
<td>drink</td>
<td>ɬé</td>
<td>ɬé</td>
<td>ɬéti</td>
</tr>
<tr>
<td>189</td>
<td>hit</td>
<td>dúː</td>
<td>dúːtě</td>
<td>dúːti</td>
</tr>
<tr>
<td>196</td>
<td>plant</td>
<td>képí</td>
<td>káptě</td>
<td>--</td>
</tr>
<tr>
<td>213</td>
<td>suck</td>
<td>lɛ́</td>
<td>lɛ</td>
<td>ló‘tì</td>
</tr>
<tr>
<td>221</td>
<td>wash</td>
<td>sápí</td>
<td>tʃáptě</td>
<td>tswápě</td>
</tr>
</tbody>
</table>

In table 13 we present examples of correspondence between [ʃ] and [s]. In this set of examples, the words from Tulai are the only ones that have a consistent form, [ʃ]. However, the interesting variation in these words is that whenever the Cha’ari word has [s] or [ʃ], the Dyarim word will have the opposite. As with the examples given in tables 9 and 11, when comparing two variations of one feature, the words in Dokshi have both variations. Considering the types of change historical linguists typically analyze for reconstructing protolanguages, there does not seem to be an explanation for a proto-phone changing randomly to opposite forms. As can be seen from the notes, there is evidence of significant interaction between West Chadic and Benue-Congo languages, and the [ʃ] ~ [s] variation is found in other languages in the same subfamilies.
Table 13. [j] ~ [s] correspondence

<table>
<thead>
<tr>
<th>#</th>
<th>Gloss</th>
<th>Cha’ari</th>
<th>Dokshi</th>
<th>Dyarim</th>
<th>Tulai</th>
<th>Notesa</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>fish</td>
<td>ɡiʃi</td>
<td>--</td>
<td>ɡwáši</td>
<td>ɡinʃi</td>
<td>BC: Shall-Zwall ɡiʃi, Bijim ɡeʃi, Kadung ɡwafí</td>
</tr>
<tr>
<td>37</td>
<td>tooth</td>
<td>jë:ní</td>
<td>jí:n</td>
<td>së:n</td>
<td>jínã</td>
<td>BC: Baba Siri tsínã, Ningi Siri ʧiŋnã</td>
</tr>
<tr>
<td>53</td>
<td>dew</td>
<td>sisir</td>
<td>súsúrí</td>
<td>ʧiʃir</td>
<td>ʧiʃirö</td>
<td>BC: Shall-Zwall sisir</td>
</tr>
<tr>
<td>73</td>
<td>stone</td>
<td>píʃi:</td>
<td>pós</td>
<td>pëšé</td>
<td>póʃi</td>
<td>Blench (2005) has pasó for Dyarim and paʃi for Cha’ari and says, “attested across South Bauchi,” although we do not have apparent cognates in any of our South Bauchi wordlists.</td>
</tr>
<tr>
<td>130</td>
<td>rotten</td>
<td>kibáʃi</td>
<td>bás</td>
<td>bwaʃtɛ</td>
<td>ɲaːbóʃi:</td>
<td>BC: Cara ibósi, Kusur-Myet bwaʃi, Bijim bwaʃi, Tiyaa bwas, Ibaas ibús</td>
</tr>
<tr>
<td>165</td>
<td>bite</td>
<td>ʰnásì</td>
<td>ngášìn</td>
<td>náʃì</td>
<td>--</td>
<td>WC: Tala nésì, Zul ʰgáášì, Zakse Zari ʰnaʃ, Guruntum-Mbaaru ɡaʃi</td>
</tr>
<tr>
<td>167</td>
<td>breathe</td>
<td>ʃó:kó</td>
<td>síkítɛ</td>
<td>--</td>
<td>--</td>
<td>WC: Choogen ʃáːʃúkà, Pa’a sákwa, Jimi súkwe, Juu sák, Buli sisík</td>
</tr>
</tbody>
</table>

Notes:

- WC is West Chadic and BC is Benue-Congo.
- From Blench (n.d.)
- Blench (2005) has [ʃ].

In table 14, we give examples of a word-initial prenasalized velar plosive in Dokshi words, but it appears that the plosive is absent in the words from the other locations. In some of the comparisons, it appears that the nasal has shifted from an alveolar to a velar.

Table 14. /ŋ/ ~ /N/ correspondence

<table>
<thead>
<tr>
<th>#</th>
<th>Gloss</th>
<th>Cha’ari</th>
<th>Dokshi</th>
<th>Dyarim</th>
<th>Tulai</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>leg</td>
<td>ʰnásìŋ</td>
<td>ngášìn</td>
<td>ɲásìŋ</td>
<td>néšínã</td>
</tr>
<tr>
<td>60</td>
<td>ground</td>
<td>ʰnáʃí</td>
<td>ngáli</td>
<td>ɲáʃí</td>
<td>ɲáʃí</td>
</tr>
<tr>
<td>165</td>
<td>bite</td>
<td>ʰnášì</td>
<td>ngášìn</td>
<td>náʃí</td>
<td>--</td>
</tr>
<tr>
<td>32</td>
<td>nose</td>
<td>ɲísìŋ</td>
<td>ngàsìn</td>
<td>ʃísìŋ</td>
<td>nítsínã</td>
</tr>
</tbody>
</table>

In table 15, we see examples in which the Cha’ari, Dyarim, and Tulai words have a voiced fricative [v] and the Dokshi words have a voiceless fricative, [h] or [f]. These are the only occurrences of [h] in any of the wordlists, except for one in the Dyarim list.
Table 15. \([v] \sim [f] \sim [h]\) correspondence

<table>
<thead>
<tr>
<th>#</th>
<th>Gloss</th>
<th>Cha’ari</th>
<th>Dokshi</th>
<th>Dyarim</th>
<th>Tulai</th>
<th>Notes C</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>knee</td>
<td>vùřŋ</td>
<td>hùřŋ</td>
<td>vōrŋ</td>
<td>--</td>
<td>/-ruŋ/ is found in several BC Kainji and Plateau languages (Rubu Bauchi, Iguta, Cara, Bijim)</td>
</tr>
<tr>
<td>55</td>
<td>farm</td>
<td>vwël</td>
<td>hùl‘là</td>
<td>vùl‘là</td>
<td></td>
<td>WC: Koenoem fàróŋ, Zibinju vúrmúnù, Jimi hùrúrn, Tala kàφûrin, possibly the fa-, vu-, hu-, and ka- are noun prefixes</td>
</tr>
<tr>
<td>64</td>
<td>rain</td>
<td>v“àn</td>
<td>f“àn</td>
<td>vwàn</td>
<td>vwànō</td>
<td>WC: Miship fwan, Doemak fūn, Nteng vän, Jimi h“àn, Juu h“âń, Buli f“àn, Nyamzak v“àn</td>
</tr>
<tr>
<td>68</td>
<td>night</td>
<td>--</td>
<td>h“âdfi</td>
<td>kâvōdfi</td>
<td>--</td>
<td>BC: Shall-Zwall nyûdfi,</td>
</tr>
<tr>
<td>159</td>
<td>yesterday (b)</td>
<td>àvōdfi</td>
<td>h“3dfi</td>
<td>ávōdfi</td>
<td>--</td>
<td>WC: Jiwoo bûdfi, Mindat màfôd, Zamwar kâfür, Juu kâhûrn, Pesse vâr³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WC: Juu hûr, Buli fûr, Nasira Zul vûrî, Mbarimi φ“èrfi</td>
</tr>
</tbody>
</table>

\(a\) It is uncertain that these words are cognate, but the \([h, f; v]\) variation is the same.

\(b\) It is possible that the words for ‘night’ and ‘yesterday’ are the same.

\(c\) The data in the Notes column comes from various SIL Nigeria survey reports. The reports are identified by language in Appendix I.

8.6 Discussion of analysis

In § 8.1 through § 8.5, we have considered linguistic variation and relationships from five perspectives: classification, in-group perceptions, phonetic similarity, lexical similarity, and phonological variation. In § 8.1, we explained that there is some disagreement about the affinities of these Zeem cluster languages. To further clarify these relationships, we would need to compare the Zeem, Dass, Zari, and Guus-Zaar cluster languages, but this was beyond the scope of this survey. If Dyarim is classified with the Guus-Zaar cluster and Dokshi is classified with the Dass cluster, then only Zeem and Tulai, Cha’ari, and Zeem would be classified in the Zeem cluster. The wordlist comparison presented in § 8.4 supports the close relationship of Tulai and Cha’ari. However, with Dokshi having possibly 71 percent similarity with Tulai there are two possible conclusions. Either Dokshi should not be classified in the Dass cluster or maybe the Dass and Zeem clusters should be combined. Again, further comparisons of these languages would help clarify relationships.

The scant data we have on Zeem from Shimazu suggests that Zeem is related enough to Cha’ari, Tulai, and Dokshi to maintain their classification together.

The analysis of the phonetic inventories does not reveal much. There is much similarity in the individual phonetic inventories, which supports their classification as related languages. Some relationships were identified in the distribution of phones that indicate a possible closer relationship between Cha’ari and Dokshi. However, the unique variation of \([v] \sim [h]\) and the fewer occurrences of \([l]\) and \([ŋ]\) is evidence that Dokshi is uniquely different from the other varieties. Blench (2005:5) discussed the unusual occurrence of labialization in Dyarim, a Chadic language. He says it is more typical of some neighboring Benue-Congo, Plateau languages, such as Berom. We found the labialization in our wordlists also. Furthermore, in § 8.5, tables 12 and 14, we were able to show more examples that demonstrate that there has been intense contact between these Chadic languages and Benue-Congo languages.

During our discussions with people about the similarity of their speech variety with those around them (see § 8.2), no one claimed that their language is close to any of the other three languages in this study. Our wordlist comparison of the four languages, presented in § 8.4, reveals that some of them,
particularly Cha’ari and Tulai, should have good comprehension of one another due to a high lexical similarity (66–80%). Due to a marginal percentage of similarity between Dokshi and Tulai (48–71%), we would also expect at least marginal comprehension between speakers. The fact that the Dokshi and Tulai did not report comprehension of other languages in this study, nor Cha’ari with Tulai, could be because the languages are essentially no longer spoken. The greatest similarity (30–46%) is found between Cha’ari and Dyarim. This confirms Blench’s (2005:15) assumption that claims of closeness between Dyarim and Cha’ari are only based on proximity.

The comparisons presented in § 8.5 tend to identify features that make the individual languages unique in certain ways. Table 8 gives examples that demonstrate a difference between Cha’ari and Dyarim. Tables 10 and 12 present evidence that Tulai is different from the other varieties. Table 11 shows a feature that makes Cha’ari different from Dokshi and Dyarim. Tables 13 and 14 demonstrate features that make Dokshi different from the other languages. In table 9, we present additional evidence that Cha’ari and Tulai have a closer relationship than any of the other language comparisons.

Therefore, from several perspectives, we have shown that Cha’ari and Tulai have enough linguistic similarity that they could be considered varieties of one language. Dyarim has enough differences that a classification in another cluster could possibly show greater similarities. While Dokshi has a somewhat close relationship with Cha’ari and Tulai, it also has several features that make it unique.

9 Summary

The Zeem cluster languages (Cha’ari, Dokshi, Dyarim, Tulai, and Zeem) are West Chadic languages spoken in southern Bauchi State, Nigeria. The classification of these languages is somewhat uncertain. They fit in the Southwest South Bauchi subgroup, also called Zaar Proper. However, it is possible that Dokshi should be grouped with Dass rather than Zeem and Dyarim should be classified with the Guus-Zaar cluster. During this research, we also learned that Zeem, Tulai, and Dokshi are dormant languages, EGIDS level 9. There are elderly Tulai and Dokshi people who remember words in the language, but they do not appear to have any speaking proficiency. We could not find anyone among the Zeem who remembered any words in Zeem, but they retain their ethnic identity. Dyarim was found to be at EGIDS level 6a which describes vigorous use of the language by all age groups. Cha’ari is assessed as EGIDS level 6b, threatened, because the people of Danshen-Lukshi no longer use Cha’ari; they have shifted to the use of Hausa.

The Zeem, Tulai, and Dokshi have shifted to the use of Hausa for virtually all functions by all age groups. English has a small role, limited to the schools and some churches. While the Dyarim and Cha’ari actively use their heritage languages in their homes and for informal, interpersonal functions, Hausa is also widely used, even in the homes.

Hausa and English were reported as the languages of literacy for all the language groups, along with a ceremonial use of Arabic in some cases. All language groups identified the younger generation to be the most literate. All groups reported having a good social and economic relationship with their neighboring and immigrant groups. They also reportedly intermarry with these groups, except Dyarim who feel reluctant to marry with the Fulani. The presence of neighboring language groups does not seem to have such a strong effect on their level of multilingualism. Only some older Dokshi and Dyarim reported any understanding of the neighboring languages. Nonetheless, Hausa is used when they meet the neighboring groups.

10 Recommendations

Currently, these five languages have only one ISO code. While Cha’ari, Tulai, and Dokshi have enough lexical similarity to consider them as one language, they perceive themselves as separate languages and ethnicities. We believe they are each independent and unique language communities, which could have their own ISO codes.

We recommend that there be more research to clarify the classification of the Zaar Proper (also called South Bauchi West) subgroup of West Chadic B.3 languages. In particular, research is needed as to
whether Dyarim should be classified more closely with the Guus-Zaar group and Dokshi with the Dass group.

Since there are significant proportions of the Cha’ari and Dyarim communities who follow different religions, namely, Islam, Christianity, and African Traditional Religion (ATR), it would be good to first do some sort of community activities to see if a unity of purpose can be achieved for language development. If there is interest expressed in language development, then we recommend that leaders from the communities be invited to attend an event called the Community-Based Language and Identity Development (CBLID) planning workshop hosted jointly by SIL Nigeria and CONAECDA.18 There they will be introduced to concepts of language vitality and language development. If the leaders desire to pursue language development, they can seek training in language development from SIL Nigeria. The leaders may be interested in contacting one of our partnering language development organizations to implement limited development projects. This could be a good opportunity to assess their long-term commitment to language development efforts. It may also inspire the speakers of the languages to further interest in other language development activities and other vernacular products.

18 CONAECDA (Facebook 2020) is a non-governmental organization advocating for the linguistic rights of Nigerian minority ethnolinguistic groups. They provide workshops and other training opportunities to facilitate language development led by the ethnolinguistic communities themselves. They use a modified activity based on the “Language and Identity Journey” (SIL 2020).
Appendix A: Dialect Mapping Instructions and Group Sociolinguistics Questionnaire

Hausa translation is in italics. Participatory guidance instructions are in square brackets [ ].

A.1 Participatory Dialect Mapping and sociolinguistic interview / Tambayon Hanyar haɓaka domin bukasar harsuna

Village—Gari: __________________________
Interviewer—Mai Tambaya: __________________________
Date—Kwanar Wata: __________________________
LGA—Karamar Hukuma: __________________________
District—Yanki: __________________________
Traditional chief—Tsarki: __________________________
Language assistants—Jagora: __________________________

Participatory Methods (PM) involve observation. Both the facilitator and the assistant can observe. Please make note of these observations on this form throughout the PM and interviews. Note people’s responses, agreements, disagreements, number in attendance, the group’s variations (gender, age ranges), and whatever else you think may be helpful.


A.2 Language identity / Harshe harshe

What is/are the name(s) of your language? [Have them write the name(s) on one piece of paper.]

- Mene ne / sunan harshen ku? [Bari su rubuta sunan a kan takarda daya.]
Which name(s) do you prefer? [Circle their preferred language name.]

- Wanne sunanko sunaye kun fi so? [Kewaye sunan da sun fi so.]

What is/are the name(s) of your people? [Have them write the name(s) on one piece of paper.]

- Mene ne / sunan mutanen ku? [Bari su rubuta sunan a kan takarda daya.]
Which name(s) do you prefer? [Circle their preferred people name.]

- Wanne sunan ko sunaye kun fi so? [Kewaye sunan da u n fi so.]

What do you call your people in your language?

- Menene kuke kira mutanenku a cikin harshenku?

What is the word for person in your language?

- Menene ana kiran kalman nan mutum a harshenku?

When you are speaking (your own language) what do you call your language?

- Yayin da kuke magana da harshen ku, menene kuke kiran harshen ku?

When speaking Hausa with other people, what do you call your language?

- Lokacin da kuke magana da harshen Hausa tare da wasu mutane, me kuke kira harshenku?

When speaking English with other people, what do you call your language?

- Lokacin da kuke magana da Turanci tare da wasu mutane, me kuke kira harshenka?

What do each of the following call you? (a) Hausa; (b) Others; (c) Government

- Menene wadanan suke kiran ku? (a) Hausawa; (b ) Sauran Su; (c) Gwanati
What does that name mean? Menene wannan sunan yake nufi?

- How do you feel about that name? Yaya kuke ji a ranku idan an kira da wannan sunan?

Briefly, please, what is the origin of your people? How do you know this?

- A takaice, don Allah, menene asalin mutanenka? Yaya aka san wannan?

A.3 Reported intelligibility / Rehotun makamantun harsuna

[Get two pieces of paper, write the name of the language and the name of the people on each. Place them before the people so that all can see.]

- [Dauki hoto na takardun nan biyu da / ko rubuta su a sama.]

Write observations:

- Rubuta bayanai:

Name all villages where [your own language_______] is spoken.

[Have them write each village on a separate piece of paper.]

- Rubuta dukun kauyuka inda ake magana da [yaren ku _______]
- [Bari su rubuta kowane kauy a a kan takarda.]

[Place these on the mat/table/ground in order to show which villages are next to each other.]

- [Sanya wannan a kan taburma / teburi / kasa don nuna wajani kauyukan da ke kusa da junai.]

[Have them arrange these by location on the ground...use the river, road, mountains, and markets pictures if it helps or if you see these things around. Be sure to circle the villages with a loop and place the language name at the top edge of the loop.]

- [Shin, sun shirya wannan ta wurin wuri a kasa ... amfani da kogin, hanyoyi, tudu, da kuma kasuwanni kalli idan yana taimakawa ko kuma idan kun ga wadan an abubuwa a kusa. Ku tabbata cewa kungiyoyin kauyuka da madauki kuma sanya sunaye sunaye a babban gefen madauki.]

Which villages speak exactly the same?

- Wadanne kauyuka suna yin magana daidai da junai?

[Mark villages that speak same by letter “S.”]

- [Yi makin kauyuka da ke magana iri daya da wata alama “S.”]

Do you learn to speak each other’s dialects?

- Kuna koyon yin magana da yarukan junai?

[Write: “We learn to speak each other’s language” or “We do not learn to speak each other’s language” for each paper.]

- [Rubuta: “Muna koyi yin yaren junai.” ko “Ba mu koyi yin yaren junai” na kowane takarda.]

Which dialect (including your own) do you understand 1st best? 2nd best? 3rd best? etc.

[Have them place 1st choice, 2nd choice, etc. on the villages or dialect groups.]

- [Bar su su aje Zaben 1st, Zaben 2nd da sauran su a kan kauye ko yare.]

A.4 Dialect relationships / Dangantakan yaruruka

[Pointing to the 1st best, ask:]

Do you understand this dialect completely, most or almost all, half, little, or none?

[Place a reference card, where all can see, listing the options, then place All, Most, Half, Little, or Non-smiley face marker(s) by the 1st best. Repeat for 2nd best, 3rd best, etc.]

- [Mika hanu akan 1st mafi kyau, sai ka tambaya:]
• Kuna fahimtar wannan yare gaba daya, mafi yawa ko kusan dukka, rabi, kadan, ko a'aa?
• [Saka “makwuli” a wurin, sa'an nan kuma sanya Duk, Mafi, Rabi, Kanana, ko Babu alamar. Fuiskance mai haske a cikin 1st Mafi kyau. Maimaita don 2nd Mafi kyau, 3rd Mafi kyau, da dai sauransu.]

[Pointing to the 1st best, ask:] When you meet people from this dialect group, how do you speak to them?
[ ++ we speak our own dialect, and they speak our dialect too, OR they speak their dialect, and we speak our dialect. – we speak another language, and they speak another language. Place the reference card out, then place ++, or – by the 1st best. Repeat for 2nd best, 3rd best, etc.]
• [Mika hanu akan 1st Mafi kyau, tambayi:]
  • Idan kun sadu da mutate daga wannan rukunin harshe, ta yaya kuke magana da su?

What other language groups live around you?
[Have them write the names of the languages and place them outside the loop, based on their geographical locations.]
  • Wadanne kungiyoyin Harsuna ne suke zaune kewaye da ku?
  • [Bari su rubuta sunayer harsunan kuma sanya su a waje da madauki, bisa ga wuraren su.]

Which of the neighboring languages do you understand?
[Have them write we speak or do not speak each other's languages.]
  • Wanne daga cikin harsunan da ke kusa da ku kun fahimta?
  • [Bari su rubuta mu magana ko ba magana da harsunan juna.]

How well do you understand the neighboring language(s)?
[Have them write on each either (a) little, (b) some, (c) well, or (d) very well.]
  • Yaya kuke fahimci harshen makwabcinku?
  • [Bari su rubuta kowanne ko dai (a) kadan, (b) wasu, (c) da kyau, ko (d) sosai.]

[Take photos of these and make SURE you can read the words in the photos.]
  • [Dauki hotunan wadannan ka kuma tabbatar za ka iya karanta kalmomi na hotuna.]

If a film or book is going to be produced in your language, which dialect would you prefer it to be in?
[Point to the dialect and write the answers here.]
  • Idan fim ko littafi za a samar a cikin harshen ku, wane yarre za ku fi son shi a cikin?
  • [Nuna waka da rubuta amoshin a nan.]

Which dialect should be used as the one for writing, recording, so that you will understand it well?
[Have them point.]
  • Wadanne yare ya kamata a yi amfani dashi a matsayin rubutaccen rubutu, rikodi, don ku fahimta da kyau?
  • [Bari su nuna.]

1st choice – Why?
  • Zabin na Farko – Me yasa?

2nd choice – Why?
  • Zabi na biyu – Me yasa?

3rd choice – Why?
  • Zabi na Uku – Me yasa?
[Write observations. (See first page for suggested observations.])

- [Rubuta abin Lura. (Duba shafin farko don shawarwarin akan abin da zaka yi Lura akai.)]

**A.5 Contact and prestige / Hulda da daraja**

Which city town/city/village do your people consider as important for all of you? Why?
- **Wane birni gari / garin / kauye ne mutanenku suke ganin muhimmancin ku duka? Me yasa?**

What dialect is spoken in that town/city/village?
- **Wane harshe ake magana a wannan gari / birni / kauye?**

Where do all speakers of your language gather for your cultural festival?
- **A ina ne duk masu magana da harshenku sukan taru don bikin al'adun ku?**

Why do you gather there?
- **Me yasa kuke taruwa a can?**

Where is the palace of your paramount ruler located?
- **Ina masallacin mai mulkinku ya kasance?**

Tell me other places where your people are located
- **Fada mini wadansu wurare inda ake samun mutanenku**

**A.6 Bilingualism / Domains of language use / Yanki na amfani da harshe**

What languages can the (persons below) in this village speak?
- **Wadanne harsuna ne (a ƙasa) a wannan ƙauyen ke magana da su/ita?**

Can they speak each language very well?
- **Za su iya magana da kowane harshe sosai**

Which language do you hear them speaking most of the time?
- **Wane harshe kukan ji su suna magana mafi yawan lokaci?**

[(mark with +), or only a bit ko kawai da (mark with -)?]
- **[(yi alama tare da +) ko (yi alama tare da +)?**

Old men – Old women
- **Tsohon Maza – Sofofi Mata**

Men – Women
- **Maza – Mata**

Young men – Young women
- **Samarai – Matashi**

Children
- **Yara**

Tell me the languages people speak in this community?
- **Ka gaya mini harsunan da mutane suna yi a cikin wannan al'umma?**

What language(s) are used:
- **Wane harshe ko harsuna ake amfani da su:**
  (a) in markets that are in this community?
  - **a kasuwanni da ke cikin wannan al'umma?**
  (b) in schools that are in this community?
  - **a makarantu da suke cikin wannan al'umma?**
(c) in churches that are in this community?
- cikin majami’u da suke cikin wannan al’umma
(d) among friends/age-mates?
- tsakanin abokai / masu aure?
(e) between grandchildren and grandparents?
- tsakanin jikoki da kakanninsu
(f) between brothers and sisters?
- tsakanin yan’uwa maza da mata?
(g) at the farm?
- a gona?
(h) for prayer at home?
- don addu’a a gida?

What language(s) do teachers use for instruction in school?
- Menene harshe (ko harsuna) da malamai suke amfani da su a makaranta?

Which languages do you use during your cultural festivals?
- Wadanne harsuna kuke amfani da su a lokacin bukukuwa naku?

Which of these groups speak own language the best? (a) children, (b) youth, (c) adult men, (d) adult women
- Wanne daga cikin wadannan kungiyoyi suna magana da harshe mafi kyau? (a) yara, (b) matasa, (c) tsofaffi maza, (d) mata masu girma

Which of these groups speak Hausa the best? (a) children, (b) youth, (c) adult men, (d) adult women
- Wanne daga cikin wadannan kungiyoyi suna Magana da Hausa mafi kyau? (a) yara, (b) matasa, (c) tsofaffi maza, (d) mata masu girma

Which of these groups speak English the best? (a) children, (b) youth, (c) adult men, (d) adult women
- Wanne daga cikin wadannan kungiyoyi suna magana daTuranci mafi kyau? (a) yara, (b) matasa, (c) tsofaffi maza, (d) mata masu girma

Which of these groups speak any neighboring language the best? (a) children, (b) youth, (c) adult men, (d) adult women
- Wanne daga cikin wadannan kungiyoyi suna magana da kyau a kowane harshe kusa da ku? (a) yara, (b) matasa, (c) tsofaffi maza, (d) mata masu girma

Which of your neighboring languages do you understand?
- Wanda harshe makwabta ne ku ke ganewa?

How well do you understand the languages? (a) little, (b) some, (c) well, (d) very well
- Yaya iya ganewan ku na harsosin nan? (a) kadan, (b) da dan dama, (c) da dama, (d) sosai

When you meet people from neighboring language groups, what language(s) do you speak with them?
- Idan kun sadu da mutane daga kungiyoyin Harsuna wanda suke zaune kewaye da ku, wane harshe kuke Magana da su?

A.7 Vitality / Muhimmanci

What language(s) do parents/caregivers speak to their children in this community?
- Wane harshe ne iyaye suna magana da ’ya’yansu a cikin wannan al’umma?

What language(s) do children in this community speak when they are playing?
- Menene harshe (ko harsuna) da yara suke yi a lokacin da suke wasa?
What language(s) do husbands and wives speak at home?
- Menene harshen ko harshuna da maza da mata suke yin magana a gida da shi?

Which language(s) is/are mostly used everywhere in this community?
- Wanne harshen ko hasuna ne / ake amfani dasha mafi yawa a cikin wannan al'umma?

A.8 Attitudes toward speakers of neighboring languages / Halin da ake nuna ga masu magana da harshuna makwabta

From or into which of your neighboring community do your women and men prefer to marry? Why?
- Wanne daga cikin kauyukan da ke kusa da ku ke yi matanku da maza sun fi so su auri daga ko cikin? Me ya sa?

From or into which language groups do your people feel reluctant to marry? Why?
- Wace harshen ne mutanen ku sukan jin kiwiyar yin aure dasu? Me ya sa?

Which language groups attend your markets?
- Wace kungiyoyen harshen ne suke zuwa cin kasuwa da ku?

Which language groups would you not welcome at your markets?
- Wace kungiyoyen harshen ba ku da marmarin cin kasuwa da su?

With which language groups do your people feel reluctant to farm?
- Wace kungiyoyen harshen ba za ku je gona da su ba?

With which language groups do you attend church service?
- Wace kungiyoyen harshen ne kuke shida majelisa tare?

With which language group’s children do your children go to the same school?
- Wace kungiyoyen harshen ne yaran su suke tafiyan makaranta daya da yaran ku?

A.9 Literature and literacy / Litattafai da rubuce-rubuce

What reading materials do you have in this community?
- Wadanne kayayakin karatu ne kuke da su a cikin wannan al'umma?

In which language(s) are the materials written?
- An Rubuto Wadanan kayan karatun a wadane harshen ko harshuna ne?

Who of these can read and write?
- Wanene daga cikinsu zai iya karatu da rubutu?
  Old men – Old women
  - Tsohon Maza – Sofofi Mata
  Men – Women
  - Maza – Mata
  Young men – Young women
  - Samarai – Matashi
  Children
  - Yara

In which language(s)?
- A wannen harshen (ko harshuna)?

How well? (in each language) [Choose: (a) not at all, (b) a little, (c) some, (d) well]
- Ta yaya? (a cikin kowane harshen) [Zabi Iraki (a) ba komai ba, (b) kadan, (c) wasu, (d) da kyau]
What kind of information/reading materials do they read?
- Wani irin littatta'afi ne sukan karanta?

What language do they use for texting?
- Wane harshe ne suke amfan da su da sako na wayar salula?

A.10 Estimated populations / An kiyasta yawancin

What is the number of all your people in the last national headcount?
- Menene kimanin dukan mutanenku a cikin kidaya na kasa wanda aka yi a kwanakin bayan?

Based on the number of people in your community for the last election, what would you say is the total number of your people now?
- Bisa ga yawan mutanen da ke cikin al'umman ku don zake na kwanakin bayan, me za ku ce shi ne yawan mutanen kuma yanga?

Estimated percentage of Muslims:
- A kimanta kashi dari na Musulmai:

Estimated percentage of Christians:
- A kimanta kashi dari na Kiristoci:

Estimated percentage of ATR:
- An kimanta kashi dari na ATR:

A.11 Community-perceived roles of vernacular Scriptures in their lives / Yadda al'umma suke ganin amfanin nassosin harshensu a rayuwarsu

Which category of people do you think will benefit the most if Scriptures were translated into your language?
- Su wanda mutanene za su fi riba I dan aka juye littafi mai tsaki cikin yaren ku?

How do you think they will benefit from the translated Scriptures?
- Yaya kuke gani za su yi riba da ga juyeyen littafi mai tsarkin?

When do you think they will use these Scriptures?
- Yaushe kuke ganin za su fara amfan da littafin?

A.12 Project support / Tallafin ginin

What are the names of your important persons who can be invited to discuss how your community can access Scriptures?
- Mene ne sunayen mutanenku masu muhimanci wadanda za a iya gayyace su domin tattauna yadda za ku iya samun damar samun Nassosi?

(a) What are their phone numbers or email addresses?
- Menene lambobin waya ko adiresoshin imel nasu?

(b) In which city/town/village do they live?
- Wane birni / garin / kauye suke da zama?

Which churches can be invited to the Scriptures access discussion?
- Wace majami'uzu za a iya gayyace su a cikin shirin samun Nassosi a harshen ku?

(a) What are the names and phone numbers of their leaders?
- Mene ne sunayen da lambobin waya na shugabannin ku?
(b) In which city/town/village do they live?
• Wace birni / garin / kauye suke da zama?

What organizations can be invited for the discussion?
• Wadane kugiyoyi ne zaku iya gayyatar don tattaunawa a kai?
(a) What are the names and phone numbers or email addresses of their leaders?
• Menene sunayen da lambobin waya ko adiresoshin imel na shugabanninsu?
(b) In which city/town/village are they located?
• Wane birni / garin / kauye ne suke da zama
Appendix B: Church Leader Questionnaire

Hausa translation is in italics.

Village _______________________________   Language _______________________________
State _________________________________   LGA _________________________________
Church name _________________________   Church denomination __________________
Language assistant _____________________   Position _____________________________
Researcher _____________________________   Date _________________________________

B.1 Percentage of Christians, Muslims and African Traditional Religion (ATR)s in the area

What percentage of the population in the area is Christian?
  • Mene ne yawan mutanen da suke Krista a yankin nan?

What percentage of the population in the area is Muslim?
  • Mene ne yawan mutanen da suke musulmi a yankin nan?

What percentage of the population in the area is ATR?
  • Wani kashi na yawan jama'a ne na safi a yankin nan?

B.2 Language(s) in which the church leaders are interested in having literature development

Which language(s) do you as a priest/pastor speak with members of your congregation in the community?
  • Wace harshe kake yi a matsayin firist / fasto yayi magana da mambobi na ikilisiyarku a cikin al'umma?

Which language(s) do you use for most activities in the church?
  • Wanne harshe/harshuna kuke amfani da shi don yawancin ayyuka a coci?

In which language(s) do you read the Bible and other materials?
  • A wadanne harshe/harshuna kuke karanta Littafi Mai-Tsarki da wasu litatafe ciki?

In which language(s) do you think is best to read the Bible and other materials?
  • Wanne harshe/harshuna kake tsammani mafi kyau a karanta Littafi Mai-Tsarki da wasu litatafe ciki?

Why do you think this/these language(s) is/are the best?
  • Me yasa kake tsammanin wannan harshe/harshuna shine/sune mafi kyau?

B.3 Language use for other church activities

What languages are used in the church for preaching?
  • Wadanne harsuna ana amfani dasu a coci don wa'azi?

What languages are used for:
  • wadanne harsuna ana amfani dasu a:
    Bible reading? Hymns / Songs?
      • Karatun Littafi Mai Tsarki? Wakoki?
    Prayer? Announcements?
      • Addu'a? Sanarwe?
Youth services? Women’s fellowship?
  • Ayyukan matasa? Zumuntan mata?

Bible studies? Other church activities?
  • Nazarin Littafi Mai Tsarki? Wasu ayyukan coci?

B.4 Potential project support

What are the names of your important persons who can be invited to discuss how your community can access Scriptures?
  • Mene ne sunayen mutanenku masu muhimanci wadanda za a iya gayyace su don tattauna yadda za ku iya samun damar Nassosi

What are their phone numbers or email addresses?
  • Menene lambobin wayan su adiresoshin imel?

In which city/town/village do they live?
  • Wace birni / garin / kauye suke zaune?

Which churches can be invited to the Scripture access discussion?
  • Wace majami’un za a iya gayyatan su domin tattaunawa na samun Littafi?

What are the names and phone numbers of their leaders?
  • Menene sunayensu da lambobin wayan shugabanninsu?

What organization can be invited for the discussion?
  • Wadanne.consume da lambobin waya ko adiresoshin imel na shugabanninsu?

What are the names and phone numbers or email addresses of their leaders?
  • Mene ne sunayen da lambobin waya ko adiresoshin imel na shugabanninsu?

In which city/town/village do they live?
  • Wace birni / garin / kauye suke zaune?
Appendix C: Mosque Leader Questionnaire

Village ____________________________ Language ____________________________  
State ______________________________ LGA ________________________________  
Mosque name _______________________ Islam denomination _________________  
Language assistant __________________ Position ____________________________  
Researcher _________________________ Date _________________________________

C.1 Language use of Islamic leaders within the mosque

What language group is your Imam from?  
In which language(s) does the Imam speak with members of your gathering in the community?  
Which language(s) do you use for most activities in the mosque?  
In which language(s) do you read the Quran and other religious materials?

C.2 Language use for mosque activities

What languages are used in the mosque for praying?  
What languages are used in the mosque for preaching and teaching?  
If the people in the mosque do not understand something that the Imam says (either in Hausa or English), what will the Imam do?  
What languages are used for:  
  Quran reading?  
  Prayer?  
  Jumat services?  
  Quran teachings?  
  Songs or recitations?  
  Announcements?  
  Other mosque activities?

C.3 Language vitality

Do you use your local language for teaching in the mosque?  
If not, do you use it for any explanation for better understanding?  
Do you use your local language for any activities within the mosque?  
Are there other Islam-related activities you do outside of the mosque?  
If yes, in what language(s) are these activities held?  
For what activities do you use your local language in the above?  
What languages do you use for greetings within the mosque?

C.4 Language development

Do you want any literacy development in your language?  
If yes, in what document would you want this?  
Where will you use this document?  
Which group will benefit more from this development?
Appendix D: School Teacher Questionnaire

School _______________________________   Language area ___________________________
State ________________________________   LGA ______________________________________
Interviewee/position _____________________   Others present _______________________
Researcher _______________________________   Date ________________________________

D.1 School staff

Headmaster’s name ______________________   Number of teachers ______________________
What languages do teachers use outside school
  • with their families:
  • with other teachers:
  • with village adults:

D.2 Size and attendance

How many children attend this school?
How many children in this area are school-aged?
Which villages do your students come from?
Which language groups do your students come from?

D.3 Language use and attitudes

What languages are used in class for teaching?
In what language(s) are the textbooks written?
What language(s) do the children use on the playground, among themselves?
  • (Confirm this by observation if possible as there may be an “official” answer.)
What happens if the children use the local language?
If a child asks you a question about a school subject away from school grounds, in what language do you respond to him?
In what language do you prefer to teach?
If you had a chance to teach in the local language, would you do so? Why?
## Appendix E: Sample Observation Schedule

<table>
<thead>
<tr>
<th>Community observations</th>
<th>Children</th>
<th>Young males</th>
<th>Young females</th>
<th>Elderly males</th>
<th>Elderly females</th>
<th>Outsiders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elderly males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elderly females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outsiders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketplace observations</td>
<td>Children</td>
<td>Young males</td>
<td>Young females</td>
<td>Elderly males</td>
<td>Elderly females</td>
<td>Outsiders</td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elderly males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elderly females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outsiders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School</td>
<td>Teacher</td>
<td>Student</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F: Wordlist

The SIL Nigeria standard 222-item wordlist is designed after the wordlists used by: Blench (for example, 2005); the wordlists used by Dettweiler and Dettweiler (for example, 2002), former SIL Nigeria surveyors; and earlier SIL Nigeria surveys (for example, Hon et al. 2018).

The transcriptions are preliminary since there was no in-depth analysis of tones or other phonological or phonetic features. In the wordlists, all entries represent phonetic transcriptions although the items are not put between square brackets. Some vowels are transcribed with the IPA symbol for vowel lengthening [:]. By this convention, however, we are not implying to have analyzed phonemic lengthening. It appears that there is extensive labialization and palatalization (see § 8.3). We have transcribed some of these consonants with a raised [w] or [j]. There are other examples of [w] or [j] following consonants that are not raised. There is probably no difference in the sounds whether the approximant is raised or not. We are not claiming to have decided that these are phonemic features; these may be separate approximant phonemes.

An asterisk (*) in the number (#) column indicates that the word was not included in the final comparison.

---

<table>
<thead>
<tr>
<th>Given language name</th>
<th>Cha’ari</th>
<th>Dokshi</th>
<th>Dyarim</th>
<th>Tulai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialect (village)</td>
<td>Danshe</td>
<td>Lukshi</td>
<td>Kayauri Dutse</td>
<td>Tulai</td>
</tr>
<tr>
<td>LGA</td>
<td>Jos East</td>
<td>Dass</td>
<td>Toro</td>
<td>Toro</td>
</tr>
<tr>
<td>State</td>
<td>Plateau</td>
<td>Bauchi</td>
<td>Bauchi</td>
<td>Bauchi</td>
</tr>
<tr>
<td>Language consultant</td>
<td>ID</td>
<td>YA</td>
<td>SH</td>
<td>HS</td>
</tr>
<tr>
<td>Age</td>
<td>75</td>
<td>79</td>
<td>80+</td>
<td>99</td>
</tr>
<tr>
<td>Sex</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>Other helpers</td>
<td>--</td>
<td>--</td>
<td>HD-M-35</td>
<td>--</td>
</tr>
<tr>
<td>Elicited by:</td>
<td>Adedamola</td>
<td>Adedamola</td>
<td>Adedamola</td>
<td>Adedamola</td>
</tr>
<tr>
<td></td>
<td>Aregbesola</td>
<td>Aregbesola</td>
<td>Aregbesola</td>
<td>Aregbesola</td>
</tr>
<tr>
<td>Date</td>
<td>1 Apr. 2021</td>
<td>1 Apr. 2021</td>
<td>2 Apr. 2021</td>
<td>31 Mar. 2021</td>
</tr>
</tbody>
</table>

* We wish to acknowledge and thank the individuals who willingly gave of their time and knowledge to help us to collect these wordlists.

---

<table>
<thead>
<tr>
<th>#</th>
<th>English gloss</th>
<th>Chaari</th>
<th>Dokshi</th>
<th>Dyarim</th>
<th>Tulai</th>
</tr>
</thead>
<tbody>
<tr>
<td>*1</td>
<td>animal</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>bird</td>
<td>jádî</td>
<td>jéî</td>
<td>rjâ:â:</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>cow</td>
<td>ūâ</td>
<td>Ĺã</td>
<td>Ĺã</td>
<td>ūã</td>
</tr>
<tr>
<td>4</td>
<td>dog</td>
<td>kàdî</td>
<td>kak’m</td>
<td>kàrâ:</td>
<td>kàdî</td>
</tr>
<tr>
<td>5</td>
<td>fish</td>
<td>giį</td>
<td>--</td>
<td>gwâ’sî</td>
<td>giį</td>
</tr>
<tr>
<td>6</td>
<td>goat</td>
<td>mâdऩi</td>
<td>mbûrã</td>
<td>mâdã:</td>
<td>mâdã:</td>
</tr>
<tr>
<td>7</td>
<td>fly</td>
<td>rë:tiŋ</td>
<td>çjîn</td>
<td>wërën</td>
<td>--</td>
</tr>
<tr>
<td>8</td>
<td>louse</td>
<td>râ:ndî</td>
<td>--</td>
<td>jëřî</td>
<td>rëndî</td>
</tr>
<tr>
<td>9</td>
<td>snake</td>
<td>wû:tį</td>
<td>b’ôki</td>
<td>âlì:’räm</td>
<td>nîrki:γà</td>
</tr>
<tr>
<td>10</td>
<td>spider</td>
<td>lípîn’lipîn</td>
<td>--</td>
<td>kâl:kâl:ů</td>
<td>--</td>
</tr>
<tr>
<td>11</td>
<td>tail</td>
<td>k’ê:ggîrî</td>
<td>kîr</td>
<td>tʃ:ër ê</td>
<td>--</td>
</tr>
<tr>
<td>12</td>
<td>wing</td>
<td>bûgà:mù</td>
<td>--</td>
<td>pàlô</td>
<td>--</td>
</tr>
<tr>
<td>13</td>
<td>horn</td>
<td>--</td>
<td>mbôn</td>
<td>nâu</td>
<td>--</td>
</tr>
<tr>
<td>14</td>
<td>feather</td>
<td>meîn:ja:ți</td>
<td>gî:în</td>
<td>pâlô</td>
<td>--</td>
</tr>
<tr>
<td>15</td>
<td>belly</td>
<td>tîkî</td>
<td>tû</td>
<td>kûtsê</td>
<td>tûkô</td>
</tr>
<tr>
<td>16</td>
<td>blood</td>
<td>vûrâ:nî</td>
<td>bûrâŋ</td>
<td>tʃ’â:r</td>
<td>bûrâ:nî:</td>
</tr>
<tr>
<td>#</td>
<td>English gloss</td>
<td>Chaari</td>
<td>Dokshi</td>
<td>Dyarim</td>
<td>Tulai</td>
</tr>
<tr>
<td>----</td>
<td>--------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>17</td>
<td>bone</td>
<td>jēs</td>
<td>mʷáttō</td>
<td>ġěsē</td>
<td>ġěsō</td>
</tr>
<tr>
<td>18</td>
<td>neck</td>
<td>ġārō</td>
<td>ġārē</td>
<td>ġārē</td>
<td>ġārē</td>
</tr>
<tr>
<td>19</td>
<td>back</td>
<td>kār</td>
<td>kārē</td>
<td>ġārē</td>
<td>ġārē</td>
</tr>
<tr>
<td>20</td>
<td>corpse</td>
<td>tāmūfi</td>
<td>vūn</td>
<td>tāmūfi</td>
<td>tāmūfi</td>
</tr>
<tr>
<td>21</td>
<td>ear</td>
<td>ġim</td>
<td>kām</td>
<td>kāmō</td>
<td>kāmō</td>
</tr>
<tr>
<td>22</td>
<td>eye</td>
<td>ġātī</td>
<td>ġātē</td>
<td>ġātē</td>
<td>ġātē</td>
</tr>
<tr>
<td>23</td>
<td>hair</td>
<td>ġḥīn</td>
<td>nālīn</td>
<td>nēzhō</td>
<td>mēzhō</td>
</tr>
<tr>
<td>24</td>
<td>hand</td>
<td>tā&quot;</td>
<td>tōsūn</td>
<td>tā&quot;</td>
<td>tā&quot;</td>
</tr>
<tr>
<td>25</td>
<td>head</td>
<td>ġâmī</td>
<td>ġâmī</td>
<td>ġâmī</td>
<td>ġâmī</td>
</tr>
<tr>
<td>26</td>
<td>heart</td>
<td>mbāfē</td>
<td>kālē</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>27</td>
<td>knee</td>
<td>ġâmi-kūvūrēn</td>
<td>vōrōŋ</td>
<td>nēsinō</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>leg</td>
<td>ɲásōn</td>
<td>ñásōn</td>
<td>ñásōn</td>
<td>ñásōn</td>
</tr>
<tr>
<td>29</td>
<td>liver</td>
<td>ġūfū</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>30</td>
<td>mouth</td>
<td>bī</td>
<td>bī</td>
<td>bī</td>
<td>kwärkibī</td>
</tr>
<tr>
<td>31</td>
<td>navel</td>
<td>tfāttē</td>
<td>tfīndē</td>
<td>tfū&quot;mē</td>
<td>--</td>
</tr>
<tr>
<td>32</td>
<td>nose</td>
<td>nēshō</td>
<td>nēshō</td>
<td>nīshō</td>
<td>nīshō</td>
</tr>
<tr>
<td>33</td>
<td>shoulder</td>
<td>bâm'lä</td>
<td>lâŋ</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>34</td>
<td>skin</td>
<td>bâgīrā</td>
<td>kōrō</td>
<td>lâttī</td>
<td>lâttī</td>
</tr>
<tr>
<td>35</td>
<td>thigh</td>
<td>tfīkēn</td>
<td>tfīn</td>
<td>nēsinō</td>
<td>nēsinō</td>
</tr>
<tr>
<td>36</td>
<td>tongue</td>
<td>ñčgē</td>
<td>nēlēm</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>37</td>
<td>tooth</td>
<td>fēn</td>
<td>sēn</td>
<td>ūnō</td>
<td>ūnō</td>
</tr>
<tr>
<td>38</td>
<td>bean</td>
<td>zām</td>
<td>zām</td>
<td>zām</td>
<td>zām</td>
</tr>
<tr>
<td>39</td>
<td>egg</td>
<td>m&quot;bōl</td>
<td>m&quot;bōl</td>
<td>m&quot;bōl</td>
<td>m&quot;bōsō</td>
</tr>
<tr>
<td>40</td>
<td>fat</td>
<td>wē&quot;</td>
<td>ū&quot;gījī</td>
<td>wē&quot;</td>
<td>--</td>
</tr>
<tr>
<td>41</td>
<td>guinea corn</td>
<td>mə&quot;</td>
<td>ɲ̃ąwū</td>
<td>ɲ̃ąwū</td>
<td>ɲ̃ąwū</td>
</tr>
<tr>
<td>42</td>
<td>hunger</td>
<td>kūsūn</td>
<td>kūzūn</td>
<td>kūzūn</td>
<td>kūzūn</td>
</tr>
<tr>
<td>43</td>
<td>meat</td>
<td>dō</td>
<td>lō&quot;</td>
<td>lō&quot;</td>
<td>lō&quot;</td>
</tr>
<tr>
<td>44</td>
<td>millet</td>
<td>w̃kētē</td>
<td>sōngō</td>
<td>sōngō</td>
<td>sōngō</td>
</tr>
<tr>
<td>45</td>
<td>tuwo</td>
<td>ñm</td>
<td>ñm</td>
<td>ñm</td>
<td>ñm</td>
</tr>
<tr>
<td>46</td>
<td>salt</td>
<td>kāl kândū</td>
<td>māsē</td>
<td>māsē</td>
<td>māsē</td>
</tr>
<tr>
<td>47</td>
<td>yam</td>
<td>ġūlīn</td>
<td>ġūlūn</td>
<td>ġūlūn</td>
<td>ġūlūn</td>
</tr>
<tr>
<td>48</td>
<td>ashes</td>
<td>dīfē</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>49</td>
<td>bark (tree)</td>
<td>kârkīn</td>
<td>węrpō</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>50</td>
<td>branch</td>
<td>tāukījānsā</td>
<td>tā&quot;kī</td>
<td>dârsō</td>
<td>tâwū</td>
</tr>
<tr>
<td>51</td>
<td>bush</td>
<td>lēpūn</td>
<td>lēp&quot;</td>
<td>bâsā</td>
<td>bīfō</td>
</tr>
<tr>
<td>52</td>
<td>cloud</td>
<td>v&quot;anāsīami</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>53</td>
<td>dew</td>
<td>sīsīr</td>
<td>sūsūrī</td>
<td>ūjīr</td>
<td>ūjīrō</td>
</tr>
<tr>
<td>54</td>
<td>door</td>
<td>bīkī</td>
<td>bīkī</td>
<td>bīkī</td>
<td>bīkī</td>
</tr>
<tr>
<td>55</td>
<td>farm</td>
<td>hūlā</td>
<td>ġtim</td>
<td>vūlā</td>
<td>vūlā</td>
</tr>
<tr>
<td>56</td>
<td>fire</td>
<td>wūtī</td>
<td>wūtē</td>
<td>wūtē</td>
<td>wūtē</td>
</tr>
<tr>
<td>57</td>
<td>flower</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>tan &quot;ñātsē</td>
</tr>
<tr>
<td>58</td>
<td>fruit</td>
<td>mə̄r̃</td>
<td>mə̄r̃</td>
<td>mə̄r̃</td>
<td>mə̄r̃</td>
</tr>
<tr>
<td>59</td>
<td>grass</td>
<td>māi</td>
<td>jārē</td>
<td>mōjo</td>
<td>mōjo</td>
</tr>
<tr>
<td>60</td>
<td>ground</td>
<td>&quot;ñalē</td>
<td>ñalē</td>
<td>ñalē</td>
<td>ñalē</td>
</tr>
<tr>
<td>61</td>
<td>leaf</td>
<td>wāltī</td>
<td>wāltī</td>
<td>dū&quot;bō</td>
<td>wāltī</td>
</tr>
<tr>
<td>#</td>
<td>English gloss</td>
<td>Chaari</td>
<td>Dokshi</td>
<td>Dyarim</td>
<td>Tulai</td>
</tr>
<tr>
<td>----</td>
<td>--------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>62</td>
<td>mahogany</td>
<td>rânkê</td>
<td>--</td>
<td>dâstê</td>
<td>--</td>
</tr>
<tr>
<td>63</td>
<td>mountain</td>
<td>gârlî</td>
<td>--</td>
<td>dâl</td>
<td>--</td>
</tr>
<tr>
<td>64*</td>
<td>rain</td>
<td>v“ân</td>
<td>f“ân</td>
<td>v“ân</td>
<td>v“ânã</td>
</tr>
<tr>
<td>65</td>
<td>river</td>
<td>lar rè</td>
<td>lâr</td>
<td>pân</td>
<td>lârê</td>
</tr>
<tr>
<td>66</td>
<td>root</td>
<td>lêgî</td>
<td>gişקêpêś</td>
<td>lûrîo</td>
<td>--</td>
</tr>
<tr>
<td>67</td>
<td>sand</td>
<td>pîfîsî</td>
<td>--</td>
<td>fâ’tê</td>
<td>--</td>
</tr>
<tr>
<td>68</td>
<td>seed</td>
<td>wêndê</td>
<td>wândê?</td>
<td>wûndîrê</td>
<td>wândê</td>
</tr>
<tr>
<td>69</td>
<td>shea butter  tree</td>
<td>“gênlô</td>
<td>ngêlî</td>
<td>jîn</td>
<td>--</td>
</tr>
<tr>
<td>70</td>
<td>sky</td>
<td>l’àm</td>
<td>l’ağ</td>
<td>l’àrim</td>
<td>--</td>
</tr>
<tr>
<td>71</td>
<td>smoke</td>
<td>wêk kê</td>
<td>pûskîn</td>
<td>jâjî</td>
<td>wêkê</td>
</tr>
<tr>
<td>72</td>
<td>stick</td>
<td>kwâlâŋ</td>
<td>kwâlâŋ</td>
<td>mêtse</td>
<td>kwâlâŋ</td>
</tr>
<tr>
<td>73</td>
<td>stone</td>
<td>pîfî</td>
<td>pôs</td>
<td>pêse-kîkjôk</td>
<td>pôfî</td>
</tr>
<tr>
<td>74</td>
<td>thorn</td>
<td>i’rî</td>
<td>--</td>
<td>“gâbê</td>
<td>--</td>
</tr>
<tr>
<td>75</td>
<td>tree</td>
<td>jânsâŋ</td>
<td>jînsô</td>
<td>nîatsê</td>
<td>jînîfînô</td>
</tr>
<tr>
<td>76</td>
<td>water</td>
<td>ðhâ</td>
<td>jà</td>
<td>ðhà</td>
<td>ðhà</td>
</tr>
<tr>
<td>77</td>
<td>wind</td>
<td>jî:tîr</td>
<td>jê:tîr</td>
<td>jâtîr</td>
<td>--</td>
</tr>
<tr>
<td>78</td>
<td>zobo leaf</td>
<td>ðfîdû</td>
<td>--</td>
<td>mákájâ</td>
<td>--</td>
</tr>
<tr>
<td>79</td>
<td>day</td>
<td>ðfâli</td>
<td>ðfîl</td>
<td>tsênêñ</td>
<td>--</td>
</tr>
<tr>
<td>80</td>
<td>night</td>
<td>gâsî</td>
<td>h“adî</td>
<td>kâvôdî</td>
<td>gâsô</td>
</tr>
<tr>
<td>81</td>
<td>moon</td>
<td>lêbû</td>
<td>lim</td>
<td>li:bê</td>
<td>--</td>
</tr>
<tr>
<td>82</td>
<td>star</td>
<td>kâdîlêbû</td>
<td>--</td>
<td>ŏjârâ</td>
<td>--</td>
</tr>
<tr>
<td>83</td>
<td>sun</td>
<td>ðfâli</td>
<td>ðfîl</td>
<td>pîtê</td>
<td>--</td>
</tr>
<tr>
<td>84</td>
<td>year</td>
<td>--</td>
<td>ðgên</td>
<td>dînê</td>
<td>--</td>
</tr>
<tr>
<td>85</td>
<td>father</td>
<td>kwârî</td>
<td>bâ</td>
<td>bû“</td>
<td>bûbâ</td>
</tr>
<tr>
<td>86</td>
<td>mother</td>
<td>ninî</td>
<td>nînî</td>
<td>ñnê</td>
<td>nînî</td>
</tr>
<tr>
<td>87</td>
<td>man</td>
<td>nâmâŋ</td>
<td>mân'</td>
<td>márma'n</td>
<td>nâmânjî</td>
</tr>
<tr>
<td>88</td>
<td>woman</td>
<td>kálmalî</td>
<td>kâlî</td>
<td>gedê</td>
<td>kâmâzî</td>
</tr>
<tr>
<td>89</td>
<td>child</td>
<td>nâ:</td>
<td>nákøjî</td>
<td>wûmîjân</td>
<td>nâjâ:</td>
</tr>
<tr>
<td>90</td>
<td>person</td>
<td>kô:jî</td>
<td>kô:jî</td>
<td>márdûn</td>
<td>kô:jî</td>
</tr>
<tr>
<td>91</td>
<td>stranger</td>
<td>sîmbîrî</td>
<td>sîmbîr</td>
<td>sîmbîr</td>
<td>sîmbîr</td>
</tr>
<tr>
<td>92</td>
<td>friend</td>
<td>m“êr</td>
<td>mûrûñ</td>
<td>márkâ</td>
<td>mûrinî</td>
</tr>
<tr>
<td>93</td>
<td>dust</td>
<td>nêptikìnêlî</td>
<td>k”oškâ</td>
<td>jêtîr</td>
<td>vûlî</td>
</tr>
<tr>
<td>94</td>
<td>hoe</td>
<td>tîmpâ</td>
<td>tûmpa</td>
<td>ñêrtînê</td>
<td>--</td>
</tr>
<tr>
<td>95</td>
<td>knife</td>
<td>sâûrî</td>
<td>sîrbû</td>
<td>sêrbê</td>
<td>sîbirî</td>
</tr>
<tr>
<td>96</td>
<td>medicine</td>
<td>“ñêkîn</td>
<td>nêjîkîn</td>
<td>wônîn</td>
<td>nînô</td>
</tr>
<tr>
<td>97</td>
<td>name</td>
<td>ñênâgô</td>
<td>ñên</td>
<td>sêm</td>
<td>--</td>
</tr>
<tr>
<td>98</td>
<td>pit</td>
<td>jî:“û</td>
<td>jî:</td>
<td>jî:û</td>
<td>jî:o</td>
</tr>
<tr>
<td>99</td>
<td>road</td>
<td>têbû</td>
<td>têbû</td>
<td>têbû</td>
<td>têbû</td>
</tr>
<tr>
<td>100</td>
<td>rope</td>
<td>ðfîmî</td>
<td>--</td>
<td>hierê</td>
<td>--</td>
</tr>
<tr>
<td>101</td>
<td>one</td>
<td>nêmî</td>
<td>nêmî</td>
<td>nêm</td>
<td>nîmî</td>
</tr>
<tr>
<td>102</td>
<td>two</td>
<td>râ:pî</td>
<td>rîpî</td>
<td>bî:hî</td>
<td>rêpî</td>
</tr>
<tr>
<td>103</td>
<td>three</td>
<td>mânbêki</td>
<td>mâ:kê</td>
<td>mâ:jî</td>
<td>mânkî</td>
</tr>
<tr>
<td>104</td>
<td>four</td>
<td>wû:psê’</td>
<td>wûpsû</td>
<td>wôp’sê</td>
<td>wôpsê’</td>
</tr>
<tr>
<td>105</td>
<td>five</td>
<td>nânntâm</td>
<td>nâmîtâm</td>
<td>nàntâm</td>
<td>nàntâm</td>
</tr>
<tr>
<td>106</td>
<td>white</td>
<td>pû:ålî</td>
<td>ðâli</td>
<td>kép:ålî</td>
<td>zëntîrî</td>
</tr>
<tr>
<td>#</td>
<td>English gloss</td>
<td>Chaarí</td>
<td>Dokshi</td>
<td>Dyarim</td>
<td>Tulai</td>
</tr>
<tr>
<td>----</td>
<td>--------------</td>
<td>---------</td>
<td>--------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>107</td>
<td>black</td>
<td>bì:</td>
<td>ḍji</td>
<td>kūdúŋ</td>
<td>dömŋ</td>
</tr>
<tr>
<td>108</td>
<td>red</td>
<td>lāŋ</td>
<td>lár</td>
<td>kēḇā́</td>
<td>láŋō</td>
</tr>
<tr>
<td>109</td>
<td>all</td>
<td>kārub’</td>
<td>kārub’</td>
<td>sūt’</td>
<td>kōʃi</td>
</tr>
<tr>
<td>110</td>
<td>many</td>
<td>kājā:</td>
<td>bāmā</td>
<td>ŋpāl</td>
<td>kōʃi</td>
</tr>
<tr>
<td>111</td>
<td>few</td>
<td>ndgiŋiŋ</td>
<td>gāp’</td>
<td>ŋk’šk</td>
<td>fė́tín</td>
</tr>
<tr>
<td>112</td>
<td>big</td>
<td>vārì</td>
<td>bār</td>
<td>kābār</td>
<td>kībār</td>
</tr>
<tr>
<td>113</td>
<td>cold</td>
<td>rūbū’dī</td>
<td>jētīr</td>
<td>kūfēn</td>
<td>jētīr</td>
</tr>
<tr>
<td>114</td>
<td>dirty</td>
<td>dīnigíːfí</td>
<td>jērdīn</td>
<td>ŋbůmõbá</td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>dry</td>
<td>kwākniː</td>
<td>--</td>
<td>kēkâ’ní</td>
<td>kēkūgníː</td>
</tr>
<tr>
<td>116</td>
<td>dull</td>
<td>dūg’gu:ní</td>
<td>--</td>
<td>ñibä</td>
<td>--</td>
</tr>
<tr>
<td>117</td>
<td>evil</td>
<td>kūjib’äsí</td>
<td>--</td>
<td>márdúngib’ásí</td>
<td>--</td>
</tr>
<tr>
<td>118</td>
<td>full</td>
<td>jē:kān</td>
<td>ɲējí</td>
<td>jōmtē</td>
<td>ñárá:ásēnníː</td>
</tr>
<tr>
<td>119</td>
<td>good</td>
<td>mbōnì</td>
<td>mbōn</td>
<td>kēvōn</td>
<td>kûmbōnì</td>
</tr>
<tr>
<td>120</td>
<td>hard</td>
<td>lātī</td>
<td>lētī</td>
<td>lātīn</td>
<td>--</td>
</tr>
<tr>
<td>121</td>
<td>heavy</td>
<td>dʒù:r</td>
<td>dʒibir</td>
<td>dibīr</td>
<td>zibir</td>
</tr>
<tr>
<td>122</td>
<td>hot</td>
<td>‘njānì</td>
<td>njēnì</td>
<td>bák	ē</td>
<td>--</td>
</tr>
<tr>
<td>123</td>
<td>left</td>
<td>nābì</td>
<td>nāptī</td>
<td>nābōi</td>
<td>tāwū</td>
</tr>
<tr>
<td>124</td>
<td>long</td>
<td>fō:fēː</td>
<td>--</td>
<td>ŋfōp’ti</td>
<td>kūkōpíː</td>
</tr>
<tr>
<td>125</td>
<td>narrow</td>
<td>lēkìː</td>
<td>gāp’</td>
<td>pādēlba</td>
<td>tījiamibá</td>
</tr>
<tr>
<td>126</td>
<td>new</td>
<td>mōrì</td>
<td>mbōrì</td>
<td>kūmōrì</td>
<td>kûmbōnìː</td>
</tr>
<tr>
<td>127</td>
<td>old</td>
<td>gwō:jí</td>
<td>ɡēj</td>
<td>māl’lōmì</td>
<td>gōrānì</td>
</tr>
<tr>
<td>128</td>
<td>right</td>
<td>tāu-kîjimí</td>
<td>tā’lānji</td>
<td>tāûjītē</td>
<td>--</td>
</tr>
<tr>
<td>129</td>
<td>ripe</td>
<td>kēp’ējí</td>
<td>--</td>
<td>ŋnə’tē</td>
<td>ŋnèjēíː</td>
</tr>
<tr>
<td>130</td>
<td>rotten</td>
<td>kēbājí</td>
<td>ñōs</td>
<td>bvaštē</td>
<td>ŋa:bojíː</td>
</tr>
<tr>
<td>131</td>
<td>sharp</td>
<td>páltē</td>
<td>--</td>
<td>ñjītē</td>
<td>--</td>
</tr>
<tr>
<td>132</td>
<td>short</td>
<td>ñdëtiríː</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>133</td>
<td>soft</td>
<td>kîlēbē</td>
<td>nāŋ</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>134</td>
<td>straight</td>
<td>kītākì</td>
<td>--</td>
<td>ŋpēn</td>
<td>--</td>
</tr>
<tr>
<td>135</td>
<td>thin</td>
<td>--</td>
<td>gāp’</td>
<td>jēl’dibā</td>
<td>--</td>
</tr>
<tr>
<td>136</td>
<td>wet</td>
<td>kîlābíː</td>
<td>dḗ</td>
<td>ŋk’kē</td>
<td>--</td>
</tr>
<tr>
<td>137</td>
<td>wide</td>
<td>kînàkí</td>
<td>--</td>
<td>pādēltì</td>
<td>--</td>
</tr>
<tr>
<td>138</td>
<td>how?</td>
<td>iní</td>
<td>dim</td>
<td>gijiná</td>
<td>--</td>
</tr>
<tr>
<td>139</td>
<td>what?</td>
<td>jînì</td>
<td>ngâ’nâ</td>
<td>ŋná</td>
<td>--</td>
</tr>
<tr>
<td>140</td>
<td>when?</td>
<td>nādâ:k’fí</td>
<td>gásągan</td>
<td>âmîn̂nà</td>
<td>--</td>
</tr>
<tr>
<td>141</td>
<td>where?</td>
<td>âuː</td>
<td>rjòː</td>
<td>â’nâ</td>
<td>--</td>
</tr>
<tr>
<td>142</td>
<td>who?</td>
<td>wēnâŋ</td>
<td>’gwan</td>
<td>wânâ</td>
<td>--</td>
</tr>
<tr>
<td>143</td>
<td>I</td>
<td>ām</td>
<td>ām̂</td>
<td>ŋn̂m</td>
<td>--</td>
</tr>
<tr>
<td>144</td>
<td>we</td>
<td>mèː</td>
<td>mè</td>
<td>mè</td>
<td>--</td>
</tr>
<tr>
<td>145</td>
<td>you (masc)</td>
<td>kìː</td>
<td>kī</td>
<td>kī</td>
<td>--</td>
</tr>
<tr>
<td>146</td>
<td>you (fem)</td>
<td>kìː</td>
<td>kī</td>
<td>kī</td>
<td>--</td>
</tr>
<tr>
<td>147</td>
<td>you (pl)</td>
<td>mèː</td>
<td>ñfēː</td>
<td>ñfè</td>
<td>kwè́</td>
</tr>
<tr>
<td>148</td>
<td>he</td>
<td>ñfōː</td>
<td>kī</td>
<td>tì</td>
<td>--</td>
</tr>
<tr>
<td>149</td>
<td>she</td>
<td>kìː</td>
<td>kī</td>
<td>kī</td>
<td>--</td>
</tr>
<tr>
<td>150</td>
<td>they</td>
<td>ñfēː</td>
<td>ñfè</td>
<td>ñfì</td>
<td>--</td>
</tr>
<tr>
<td>151</td>
<td>and</td>
<td>ñr</td>
<td>r̂</td>
<td>ñar</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>English gloss</td>
<td>Chaari</td>
<td>Dokshi</td>
<td>Dyarim</td>
<td>Tulai</td>
</tr>
<tr>
<td>----</td>
<td>--------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>152</td>
<td>near</td>
<td>ąkù:</td>
<td>ndák'</td>
<td>vwát</td>
<td>--</td>
</tr>
<tr>
<td>153</td>
<td>far</td>
<td>sıgà:</td>
<td>/tiny/</td>
<td>tā'</td>
<td>--</td>
</tr>
<tr>
<td>154</td>
<td>here</td>
<td>ákù:</td>
<td>nükü</td>
<td>v'at</td>
<td>--</td>
</tr>
<tr>
<td>155</td>
<td>there</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>156</td>
<td>this</td>
<td>góní</td>
<td>țăm'ōnī</td>
<td>țünî</td>
<td>--</td>
</tr>
<tr>
<td>157</td>
<td>that</td>
<td>țăm'ákà</td>
<td>țăm'ânsî</td>
<td>țăm'ânsî</td>
<td>--</td>
</tr>
<tr>
<td>158</td>
<td>between</td>
<td>țámî:</td>
<td>--</td>
<td>lâmô</td>
<td>--</td>
</tr>
<tr>
<td>159</td>
<td>yesterday</td>
<td>âvòɗí</td>
<td>hâ'âvòɗí</td>
<td>âvòɗí</td>
<td>--</td>
</tr>
<tr>
<td>160</td>
<td>tomorrow</td>
<td>jò'</td>
<td>ájō</td>
<td>â'çë:rî</td>
<td>--</td>
</tr>
<tr>
<td>161</td>
<td>now</td>
<td>wènî:</td>
<td>nôkîj</td>
<td>k'ûnî</td>
<td>--</td>
</tr>
<tr>
<td>162</td>
<td>later</td>
<td>dûm</td>
<td>--</td>
<td>sâjân</td>
<td>--</td>
</tr>
<tr>
<td>163</td>
<td>before</td>
<td>ûtên</td>
<td>--</td>
<td>jâmî</td>
<td>--</td>
</tr>
<tr>
<td>164</td>
<td>after</td>
<td>kàri:tûgü</td>
<td>kàrì:kìgònì</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>165</td>
<td>bite</td>
<td>ò' sûsë</td>
<td>ngàsín</td>
<td>nà:jì</td>
<td>--</td>
</tr>
<tr>
<td>166</td>
<td>blow</td>
<td>fâ'áti</td>
<td>twât</td>
<td>fâ:tê</td>
<td>--</td>
</tr>
<tr>
<td>167</td>
<td>breathe</td>
<td>jò:kô</td>
<td>sikité</td>
<td>lësëwô</td>
<td>--</td>
</tr>
<tr>
<td>168</td>
<td>burn</td>
<td>jîkim</td>
<td>tibëkî</td>
<td>âbàl</td>
<td>--</td>
</tr>
<tr>
<td>169</td>
<td>come</td>
<td>wò:kë</td>
<td>ûfî</td>
<td>bîtê</td>
<td>--</td>
</tr>
<tr>
<td>170</td>
<td>count</td>
<td>bêlî</td>
<td>ûiû</td>
<td>kwà:nî</td>
<td>--</td>
</tr>
<tr>
<td>171</td>
<td>cut</td>
<td>fàl</td>
<td>òlû</td>
<td>tsâ:lî</td>
<td>--</td>
</tr>
<tr>
<td>172</td>
<td>dance</td>
<td>ñë:pi</td>
<td>ñë:fi</td>
<td>ñàpî</td>
<td>--</td>
</tr>
<tr>
<td>173</td>
<td>die</td>
<td>ðë:ti</td>
<td>ðë:sti</td>
<td>ðàstê</td>
<td>--</td>
</tr>
<tr>
<td>174</td>
<td>dig</td>
<td>ðë:ti</td>
<td>ðàtî</td>
<td>ðà:tî</td>
<td>--</td>
</tr>
<tr>
<td>175</td>
<td>drink</td>
<td>ë</td>
<td>ë</td>
<td>ëî</td>
<td>--</td>
</tr>
<tr>
<td>176</td>
<td>eat</td>
<td>--</td>
<td>--</td>
<td>ñjì</td>
<td>--</td>
</tr>
<tr>
<td>177</td>
<td>enter</td>
<td>ðù:lù</td>
<td>ðà</td>
<td>wàd'dà</td>
<td>--</td>
</tr>
<tr>
<td>178</td>
<td>exit</td>
<td>ðë:ktì</td>
<td>ðë:t</td>
<td>ðà</td>
<td>--</td>
</tr>
<tr>
<td>179</td>
<td>fall</td>
<td>ðë:ltò</td>
<td>ðà:dà</td>
<td>dàtê</td>
<td>--</td>
</tr>
<tr>
<td>180</td>
<td>fear</td>
<td>ðë:ntî</td>
<td>ðë:ntê</td>
<td>ðbàlê</td>
<td>--</td>
</tr>
<tr>
<td>181</td>
<td>fight</td>
<td>ðë:mì</td>
<td>ðà:n</td>
<td>ðà:njì</td>
<td>--</td>
</tr>
<tr>
<td>182</td>
<td>fly</td>
<td>ðë:m</td>
<td>ðë:m-àlê</td>
<td>twàlërîm</td>
<td>--</td>
</tr>
<tr>
<td>183</td>
<td>follow</td>
<td>ðë:ltì</td>
<td>ðòl</td>
<td>ðò:tê</td>
<td>--</td>
</tr>
<tr>
<td>184</td>
<td>forge</td>
<td>ðëpi</td>
<td>ðë:pò</td>
<td>ðëpê</td>
<td>--</td>
</tr>
<tr>
<td>185</td>
<td>give</td>
<td>ðë:ftî</td>
<td>ðë:ftê</td>
<td>ðë:ftê</td>
<td>--</td>
</tr>
<tr>
<td>186</td>
<td>go</td>
<td>ðà</td>
<td>ðà</td>
<td>ðà</td>
<td>--</td>
</tr>
<tr>
<td>187</td>
<td>harvest</td>
<td>ðà:pìn</td>
<td>ðà:pì</td>
<td>ðà:káp'tì</td>
<td>--</td>
</tr>
<tr>
<td>188</td>
<td>hear</td>
<td>ðù:ámì</td>
<td>ðù:mì</td>
<td>ðwò:tì</td>
<td>--</td>
</tr>
<tr>
<td>189</td>
<td>hit</td>
<td>ðù:</td>
<td>ðù:tê</td>
<td>ðù:tì</td>
<td>--</td>
</tr>
<tr>
<td>190</td>
<td>hold</td>
<td>ðë:ptì</td>
<td>ðë:ptì</td>
<td>ðë:ptì</td>
<td>--</td>
</tr>
<tr>
<td>191</td>
<td>hunt</td>
<td>ðà:r</td>
<td>ðà:r</td>
<td>ðà:pàs</td>
<td>--</td>
</tr>
<tr>
<td>192</td>
<td>kill</td>
<td>ðë:sì</td>
<td>ðë:mbis</td>
<td>ðàvì</td>
<td>--</td>
</tr>
<tr>
<td>193</td>
<td>know</td>
<td>ðë:sì</td>
<td>ðë:stì</td>
<td>ðë:stì</td>
<td>--</td>
</tr>
<tr>
<td>194</td>
<td>laugh</td>
<td>ðë:mbì</td>
<td>ðë:msì</td>
<td>ðë:msì</td>
<td>--</td>
</tr>
<tr>
<td>195</td>
<td>lie (down)</td>
<td>ðë:mbì</td>
<td>ðë:mbùt'</td>
<td>ðë:mbùt'</td>
<td>--</td>
</tr>
<tr>
<td>196</td>
<td>plant</td>
<td>ðë:pì</td>
<td>ðë:kàptì</td>
<td>ðë:gorì</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>English gloss</td>
<td>Chaari</td>
<td>Dokshi</td>
<td>Dyarim</td>
<td>Tulai</td>
</tr>
<tr>
<td>----</td>
<td>---------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>197</td>
<td>play</td>
<td>kísírí</td>
<td>pil'úu</td>
<td>twákím</td>
<td>--</td>
</tr>
<tr>
<td>198</td>
<td>pour</td>
<td>jítě</td>
<td>jú:</td>
<td>wúl'dá</td>
<td>--</td>
</tr>
<tr>
<td>199</td>
<td>pull</td>
<td>m'búgí</td>
<td>--</td>
<td>tô'</td>
<td>--</td>
</tr>
<tr>
<td>200</td>
<td>push</td>
<td>t'ígólná</td>
<td>tiŋtë</td>
<td>a'dá'lí</td>
<td>--</td>
</tr>
<tr>
<td>201</td>
<td>say</td>
<td>p'lıkër</td>
<td>lín</td>
<td>wólí</td>
<td>--</td>
</tr>
<tr>
<td>202</td>
<td>scratch</td>
<td>nárq;ō</td>
<td>káptë</td>
<td>sústí</td>
<td>--</td>
</tr>
<tr>
<td>203</td>
<td>see</td>
<td>jení</td>
<td>jámi</td>
<td>jéli</td>
<td>--</td>
</tr>
<tr>
<td>204</td>
<td>sew</td>
<td>rálí</td>
<td>ríp'</td>
<td>rú'tí</td>
<td>--</td>
</tr>
<tr>
<td>205</td>
<td>sing</td>
<td>l'ou</td>
<td>l'àª</td>
<td>a'gél'mèr</td>
<td>--</td>
</tr>
<tr>
<td>206</td>
<td>sit</td>
<td>dám</td>
<td>dám</td>
<td>sáŋáli</td>
<td>--</td>
</tr>
<tr>
<td>207</td>
<td>sleep</td>
<td>rìmódë</td>
<td>piríbût</td>
<td>a'dámá'dë</td>
<td>--</td>
</tr>
<tr>
<td>208</td>
<td>smell</td>
<td>jádlí</td>
<td>--</td>
<td>lék'téfùn</td>
<td>--</td>
</tr>
<tr>
<td>209</td>
<td>spit</td>
<td>tóptí</td>
<td>--</td>
<td>wút'tánäí</td>
<td>--</td>
</tr>
<tr>
<td>210</td>
<td>split</td>
<td>lárí</td>
<td>--</td>
<td>lártjí</td>
<td>--</td>
</tr>
<tr>
<td>211</td>
<td>squeeze</td>
<td>nqápí</td>
<td>t'íptë</td>
<td>rú'mtú</td>
<td>--</td>
</tr>
<tr>
<td>212</td>
<td>stand</td>
<td>tám</td>
<td>tám</td>
<td>t'íp'té</td>
<td>--</td>
</tr>
<tr>
<td>213</td>
<td>suck</td>
<td>té'</td>
<td>--</td>
<td>ló'tí</td>
<td>--</td>
</tr>
<tr>
<td>214</td>
<td>sweep</td>
<td>sádfí</td>
<td>--</td>
<td>sá'tí</td>
<td>--</td>
</tr>
<tr>
<td>215</td>
<td>swim</td>
<td>kísirí'àjà</td>
<td>--</td>
<td>ńdát'kícàh</td>
<td>--</td>
</tr>
<tr>
<td>216</td>
<td>think</td>
<td>léğábúkàli</td>
<td>t'íngir</td>
<td>némítí</td>
<td>--</td>
</tr>
<tr>
<td>217</td>
<td>throw</td>
<td>ládáí</td>
<td>t'á't'ë</td>
<td>ngémí</td>
<td>--</td>
</tr>
<tr>
<td>218</td>
<td>tie</td>
<td>gútí</td>
<td>g'entür</td>
<td>gëntî</td>
<td>--</td>
</tr>
<tr>
<td>219</td>
<td>vomit</td>
<td>jájí</td>
<td>b'ën</td>
<td>kák'të</td>
<td>--</td>
</tr>
<tr>
<td>220</td>
<td>walk</td>
<td>rítë</td>
<td>pirítë</td>
<td>té</td>
<td>--</td>
</tr>
<tr>
<td>221</td>
<td>wash</td>
<td>sápí</td>
<td>t'íptë</td>
<td>tswápë</td>
<td>--</td>
</tr>
<tr>
<td>222</td>
<td>cry</td>
<td>kúlí</td>
<td>píkúlí</td>
<td>kúle</td>
<td>--</td>
</tr>
</tbody>
</table>
Appendix G: Extra Wordlist Data – Cha’ari and Dyarim Plurals

Further wordlist data that were not used in the wordlist comparison are reproduced here so that the data is not lost. These are the plural forms of nouns that were collected in Cha’ari and Dyarim.

<table>
<thead>
<tr>
<th>#</th>
<th>English gloss</th>
<th>Cha’ari</th>
<th>Dyarim</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>birds</td>
<td>jáːlís</td>
<td>jáːlís</td>
</tr>
<tr>
<td>3</td>
<td>cows</td>
<td>ɫāːsì</td>
<td>ɫāːsì</td>
</tr>
<tr>
<td>4</td>
<td>dogs</td>
<td>kāːdːiʃ</td>
<td>kāːdːiʃ</td>
</tr>
<tr>
<td>5</td>
<td>fish</td>
<td>giʃëːsì</td>
<td>giʃëːsì</td>
</tr>
<tr>
<td>6</td>
<td>goats</td>
<td>màːḍːsì</td>
<td>màːḍːsì</td>
</tr>
<tr>
<td>9</td>
<td>snakes</td>
<td>wūːtʃëːsì</td>
<td>wūːtʃëːsì</td>
</tr>
<tr>
<td>12</td>
<td>wings</td>
<td>bʊːɡːmäːsĩ</td>
<td>bʊːɡːmäːsĩ</td>
</tr>
<tr>
<td>13</td>
<td>horns</td>
<td>--</td>
<td>náuːsì</td>
</tr>
</tbody>
</table>
### Appendix H: GPS Coordinates

<table>
<thead>
<tr>
<th>Village name</th>
<th>Language</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danshe</td>
<td>Cha’ari</td>
<td>10.00982098</td>
<td>9.207837973</td>
</tr>
<tr>
<td>Gombo</td>
<td>Cha’ari</td>
<td>10.01559301</td>
<td>9.209681991</td>
</tr>
<tr>
<td>Taka-Lafiya</td>
<td>Cha’ari</td>
<td>10.01924903</td>
<td>9.211816024</td>
</tr>
<tr>
<td>Lukshi</td>
<td>Dokshi</td>
<td>10.02498804</td>
<td>9.374840017</td>
</tr>
<tr>
<td>Madaki</td>
<td>Dokshi</td>
<td>10.032058</td>
<td>9.419839019</td>
</tr>
<tr>
<td>Kayauri Dutse</td>
<td>Dyarim</td>
<td>10.02926901</td>
<td>9.049519999</td>
</tr>
<tr>
<td>Kayauri Sallah</td>
<td>Dyarim</td>
<td>10.03585299</td>
<td>9.068156993</td>
</tr>
<tr>
<td>Jojori</td>
<td>Tulai</td>
<td>10.06355099</td>
<td>9.298866028</td>
</tr>
<tr>
<td>Jonga</td>
<td>Tulai</td>
<td>10.04411403</td>
<td>9.264981011</td>
</tr>
<tr>
<td>Dini</td>
<td>Tulai</td>
<td>10.06291799</td>
<td>9.250473026</td>
</tr>
<tr>
<td>Tulai</td>
<td>Tulai</td>
<td>10.06672799</td>
<td>9.284835979</td>
</tr>
<tr>
<td>Dandore</td>
<td>Tulai</td>
<td>10.12091598</td>
<td>9.259243011</td>
</tr>
<tr>
<td>Mai Allo</td>
<td>Tulai</td>
<td>10.10195796</td>
<td>9.223595029</td>
</tr>
<tr>
<td>Mai Ganga</td>
<td>Tulai</td>
<td>10.08048898</td>
<td>9.255696042</td>
</tr>
<tr>
<td>Pan Shanu</td>
<td>Tulai</td>
<td>10.09766299</td>
<td>9.210672984</td>
</tr>
<tr>
<td>Kwagga</td>
<td>Tulai</td>
<td>10.11064899</td>
<td>9.243265009</td>
</tr>
<tr>
<td>Gin-Gin</td>
<td>Zeem</td>
<td>10.18525003</td>
<td>9.264105018</td>
</tr>
<tr>
<td>Zayam</td>
<td>Zeem</td>
<td>10.146402</td>
<td>9.282596</td>
</tr>
</tbody>
</table>
Appendix I: Data Sources

The data in the Notes column of table 15 has come from numerous SIL Nigeria survey team reports, some of which are still in the process of being prepared for publication in the *Journal of Language Survey Reports*. References are typically organized alphabetically by author names. The following list directs the reader to the key language names in the titles found in the References section. The Decker et al. citations in the References will be organized by the year and alphabetically by the key language name.

- Bauchi-Fungwa – 2021a
- Bijim – 2021b
- Buli – See Polci Cluster
- Cara – 2021c
- Doemak – See Nteng
- Duhwa, Mindat, Sya – 2021d
- Giiwo – See West Chadic A.2 Bole
- Iguta – 2021e
- Jimi – See West Chadic B.3
- Juu – See West Chadic B.3
- Koenoe – 2021f
- Mbarimi – See Polci Cluster
- Mindat – See Duhwa, Mindat, Sya
- Miship – 2021g
- Nasira Zul – See Polci Cluster
- Nteng – 2021h
- Nyamzak – See Polci Cluster
- Pesse – See Polci Cluster
- Polci Cluster – 2022a
- Rubo Bauchi – see Bauchi-Fungwa
- Shall-Zwall – 2022b
- Tala – See West Chadic B.3
- West Chadic A.2 Bole – 2022c
- West Chadic B.3 – 2022d
- West Chadic North Bauchi – 2021i
- Zanwar – See West Chadic B.3
- Zibinju – See West Chadic North Bauchi
References


